

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF WEST VIRGINIA
AT CLARKSBURG**

)	
WYETH,)	
)	
Plaintiff,)	
)	
v.)	Civil Action No. 1:07 CV91
)	(Judge Irene M. Keeley)
MYLAN PHARMACEUTICALS, INC.,)	
)	
Defendant.)	
)	

**PLAINTIFF WYETH'S BIOGRAPHICAL SKETCHES
OF PROPOSED EXPERT WITNESSES**

Pursuant to the Court's Scheduling Order of November 13, 2007 [D.E. 39], Plaintiff Wyeth submits herewith biographical sketches of the experts it intends to call as witnesses at trial.

Wyeth's Proposed Expert Witnesses

Wyeth lists hereunder the name and general specialties of the experts it proposes to call as witnesses at trial. The listed experts' specialties are also set forth in detail in their expert reports that have been served in this case, and in the attached curriculum vitae.

1. Dr. Henry Grabowski (live)
Department of Economics
Duke University
213 Social Sciences
Box 90097
Durham, North Carolina 27708-0097

Professor Henry G. Grabowski, Ph.D., is an expert in the field of the economics of the pharmaceutical and health industries. He has over 40 years of experience in the study of

economics, much of it in the pharmaceutical and health care industries. Dr. Grabowski holds a B.S. in Engineering Physics from Lehigh University, and both master's and doctorate degrees in Economics from Princeton University. After receiving his Ph.D., Dr. Grabowski held positions at Yale University as an Assistant Professor of Economics and as a Research Associate at the National Bureau of Economic Research. In 1972, Dr. Grabowski became an Associate Professor of Economics at Duke University. In 1976, he became a Full Professor of Economics at Duke University, and in 2009, he became Professor Emeritus there. From 1983 to present, Dr. Grabowski has also served as the Director of Duke University's Program in Pharmaceuticals and Health Economics, that focuses on the study of economics of these industries. Over his career he has taught a graduate level course on economic and policy issues facing the pharmaceutical industry.

Dr. Grabowski also served on the Board of Directors for Triangle Pharmaceuticals, Inc. prior to its acquisition by Gilead Pharmaceuticals in 2003. Triangle Pharmaceuticals was a development stage company focusing on antiviral therapies. Dr. Grabowski has also consulted with numerous pharmaceutical companies during his career. Dr. Grabowski has also been an advisor and consultant to a number of government agencies including the National Academy of Sciences, the Federal Trade Commission, the General Accounting Office, and the Office of Technology Assessment. Dr. Grabowski has also served as a Research Fellow at the International Institute of Management in Berlin, Germany, as a Visiting Scholar at the Health Care Financing Administration from 1979 to 1980, and for the Office of Health Economics in London, and the Centre for Medicines Research in London.

Dr. Grabowski's academic and research specialties include the pharmaceutical industry and health economics, the economics of innovation, government regulation of business, and

industrial organization. Dr. Grabowski has authored numerous books, articles and papers on economic issues facing the pharmaceutical industry. He has also testified before several Congressional committees regarding such issues as effective patent life for pharmaceuticals, competition by generic pharmaceutical companies, health care reform legislation during the Clinton Administration, and more recently on a possible abbreviated regulatory system for biologics. Under a series of grants from the National Science Foundation, Dr. Grabowski examined the economics of research and development (R&D) of the pharmaceutical industry, and the effect of government policies on innovation in the industry.

Dr. Grabowski is also an Adjunct Scholar and Advisory Board member for Health Policy Research at the American Enterprise Institute for Public Policy Research. He is on the Board of Scientific Advisors for the American Council of Science and Health. Dr. Grabowski is also an Associate Editor for The Quarterly Review of Economics and Finance, and previously served as an Associate Editor for The Journal of Research in Pharmaceutical Economics.

A more detailed description of Dr. Grabowski's professional experience appears in his CV, which is attached as Exhibit A.

2. Dr. Eric Hollander (live)
Neuropharmacology Services, LLC, and
Institute of Clinical Neurosciences
300 Central Park West
Suite 1C
New York, New York 10024

Dr. Eric Hollander, a practicing psychiatrist and former professor of psychiatry, has over 20 years of experience in the fields of psychiatry and psychopharmacology, including depression and anxiety, the treatment of depression and anxiety, and the use and prescription of pharmaceutical antidepressants and anxiolytics. Dr. Hollander received a Bachelors of Arts degree in psychology from Brandeis University in 1978, and a medical degree from the State

University of New York, Downstate Medical College in 1982. He was a resident in internal medicine and psychiatry at Mount Sinai from 1982-1986, was Chief Resident in Psychiatry Research during his last year of residency, completed a fellowship in psychopharmacology and anxiety disorders at Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute from 1986-1988, and has been a practicing psychiatrist since he completed his residency in 1986. In his clinical work, Dr. Hollander has personally treated over a thousand patients suffering from psychiatric disorders including depression and anxiety. In his teaching, he has taught courses on the diagnosis, psychopharmacology and neurobiology of anxiety, mood and compulsive/impulsive disorders as well as on autism and developmental disorders. He is currently a Research Attending Psychiatrist at Montefiore Medical Center University Hospital for Albert Einstein College of Medicine in New York and the Director of the Institute of Clinical Neuroscience and Director of Neuropharmacology Services in New York, New York.

Dr. Hollander began his teaching career in 1986 as an Instructor of Clinical Psychiatry at Columbia University. He became Assistant Professor at Columbia University in 1988, and Associate Professor in 1992. In 1993 he transitioned to Mount Sinai School of Medicine as an Associate Professor of Psychiatry. Dr. Hollander became a full Professor of Psychiatry in 1996. During his 15 years at Mt. Sinai, Dr. Hollander was the Chairman of Psychiatry, the Director of the Compulsive, Impulsive, and Anxiety Disorder Program, the Director of Clinical Psychopharmacology, the Director of the Seaver Autism Research Center, the Director of Greater New York Autism Center of Excellence at the Mount Sinai School of Medicine, and the Esther and Joseph Klingenstein Professor of Psychiatry. During his tenure at Mt. Sinai, Dr. Hollander had 700 psychiatrists reporting directly or indirectly to him.

Dr. Hollander has extensive experience with the diagnosis and treatment of depression and anxiety disorders and with prescribing practices for antidepressant medications. He has written more than 500 articles on psychiatry and psychopharmacology and has edited or co-edited several textbooks related to anxiety disorders. In addition, Dr. Hollander has received numerous awards, including a Distinguished Fellow Award from the American Psychiatric Association, Distinguished Investigator Awards from the National Alliance for Research in Schizophrenia and Depression, and a Research Scientist Development Award from the National Institute of Mental Health.

A more detailed description of Dr. Hollander's professional experience appears in his CV, which is attached as Exhibit B.

3. Dr. James W. McGinity (live)
College of Pharmacy
The University of Texas at Austin
Austin, Texas 78712-1074

Dr. James W. McGinity is a pharmaceutical scientist with over 35 years of practical hands on experience in the fields of pharmaceutical processing and extended release technologies, as well as experience in training those newly becoming skilled in the art of pharmaceutical research and development. Dr. McGinity received a Bachelor of Pharmacy degree from the University of Queensland in 1967, and a Ph.D. in Physical Pharmacy from the University of Iowa in 1972.

After receiving his Ph.D., Dr. McGinity worked as a Research Investigator for E.R. Squibb and Sons, in New Brunswick, New Jersey. While at E.R. Squibb, Dr. McGinity developed formulations for oral, ophthalmic and topical drug products. Dr. McGinity joined the faculty at the School of Pharmacy at Texas Southern University in 1973 as an Associate

Professor of Pharmacy. Dr. McGinity then moved to the College of Pharmacy at the University of Texas in 1976, where he still teaches. In his time at the University of Texas, Dr. McGinity has held the titles of Assistant Professor, Associate Professor, and finally full Professor as of 1985. Dr. McGinity was the Assistant Director and Director of the Drug Dynamics Institute at the College of Pharmacy from September 1979 to August 2008, and the Division Head of Pharmaceutics from 1983 until August 2007. Dr. McGinity has taught numerous graduate and undergraduate courses including Product Development, Advanced Manufacturing Pharmacy, Advanced Pharmaceutical Processes, and Pharmaceutical Dosage Forms.

Dr. McGinity's research interests include preformulation, materials science, tablet technology, film coating and pellet technologies, pharmaceutical processing, and the design of extended release dosage forms. Dr. McGinity has published over 160 articles in peer-reviewed journals, over 25 book chapters, has been named as an inventor on 23 US patents, and has delivered over 300 presentations at scientific meetings. The majority of Dr. McGinity's publications and presentations focus on oral extended release formulations. Dr. McGinity also serves on the editorial board of 9 peer-reviewed journals and is the US editor for the European Journal of Pharmaceutics and Biopharmaceutics and the co-editor of the textbook Aqueous Polymeric Coatings for Pharmaceutical Dosage Forms.

In addition to his work in academia, Dr. McGinity served for ten years as the Chief Executive Officer of PharmaForm, L.L.C., a fee-for-service and drug delivery research and development company. Dr. McGinity's tenure as CEO of PharmaForm ended when the company was purchased by a public Canadian Pharmaceutical Company in January 2007, but Dr. McGinity has continued to consult for the company since that time. In connection with his work for Evonik, a supplier of acrylic polymers used primarily in film coatings for

pharmaceutical products, he has provided information on the properties and applications of Evonik's products to pharmaceutical scientists in both academia and the pharmaceutical industry. Throughout his career, Dr. McGinity has also served as a pharmaceutical formulation consultant to not only numerous innovator and generic companies, but to the FDA as well.

Dr. McGinity is a frequent lecturer at International Symposia and Conferences. He is also the recipient of many honors and awards, and is currently scheduled to receive the 2009 Distinguished Alumnus Award from the College of Pharmacy from the University of Iowa on October 10, 2009.

A more detailed description of Dr. McGinity's professional experience appears in his CV, which is attached as Exhibit C.

4. Dr. Ronald J. Sawchuk (live)
Department of Pharmaceutics
College of Pharmacy
Room 9-143 Weaver-Densford Hall
University of Minnesota
308 Harvard Street, N.E.
Minneapolis, Minnesota 55455

Dr. Ronald A. Sawchuk is an expert in the fields of pharmacokinetics, pharmacodynamics, and biopharmaceutics. He has over 35 years of experience in academia, and has served as a consultant to the pharmaceutical industry for more than 25 years. Dr. Sawchuk has both a Bachelor and Master's of Science in Pharmacy degree from the University of Toronto, and a Ph.D. in Pharmaceutical Chemistry with a focus in Pharmacokinetics from the University of California, San Francisco. Dr. Sawchuk's research currently focuses on neuropharmaceutics and the delivery of drugs to the central nervous system.

Dr. Sawchuk began his teaching career as an Instructor in Pharmaceutics at the University of Minnesota in 1971. He became an Assistant Professor of Pharmaceutics in 1972,

an Associate Professor in 1977, and a Full Professor in 1983. Dr. Sawchuk has served as Associate Director and Director of the Clinical Pharmacokinetics Laboratory at the College of Pharmacy at the University of Minnesota. He has also served as the Director of Graduate Studies in Pharmaceutics and the Head of the Department of Pharmaceutics at the University of Minnesota. Dr. Sawchuk currently holds the titles of Morse Alumni Distinguished Teaching Professor of Pharmacokinetics, and Director of the Bioanalytic and Pharmacokinetic Services Laboratory, at the University of Minnesota College of Pharmacy. He has taught classes in pharmacokinetics, advanced pharmacokinetics, basic pharmacokinetic modeling, and advanced neuropharmaceutics.

Dr. Sawchuk is currently on the editorial board of *Xenobiotica* and the editorial advisory boards of the *AAPS Journal* and the *Saudi Pharmaceutical Journal*, and has recently served for more than ten years on the editorial board of the *Journal of Pharmaceutical Sciences*. He has written six books/chapters, over 100 peer-reviewed scientific publications, and over 175 abstracts. Dr. Sawchuk is an inventor on a patent for methods and compositions for applying pharmacologic agents to the ear. He is also a frequent invited lecturer at universities, workshops, and pharmaceutical companies, and has served as the co-chair, co-organizer or scientific advisor for numerous symposia.

Dr. Sawchuk was the recipient of the 2007 American Pharmacists Association (APhA) Research Achievement Award in the Pharmaceutical Sciences, in recognition for his contributions in the area of basic pharmaceutical sciences and specifically for his work in the areas of concentration monitoring of antibiotics and in microdialysis pharmacokinetics. His other honors include the Weaver Medal of Honor, and as a fellow with the American Association of Pharmaceutical Scientists and the American Association for the Advancement of Science.

In addition to his experience in academia, Dr. Sawchuk has served as a consultant to pharmaceutical companies and/or taught courses at companies such as Sandoz Pharmaceuticals, Novartis AG, Abbott Laboratories, Bristol-Myers Squibb, Schering Plough Corp., Millennium Pharmaceuticals, Gilead Sciences, Boehringer-Ingelheim Pharmaceuticals, Lundbeck Research, Theravance, Inc., Allergan, Inc., Genentech, and the U.S. Patent and Trademark Office.

A more detailed description of Dr. Sawchuk's professional experience appears in his CV, which is attached as Exhibit D.

5. Dr. Dhiren R. Thakker (live)
University of North Carolina School of Pharmacy
Division of Molecular Pharmaceutics
301 Pharmacy Lane
Beard Hall, Room #26
Chapel Hill, North Carolina 27599-7360

Professor Dhiren R. Thakker, Ph.D., is an expert in fields of pharmacokinetics and drug metabolism, including the absorption, metabolism, and distribution of drugs in the body. He has over 35 years of experience in government, private industry, and academia. Dr. Thakker has a B.Pharm from the University of Bombay, a masters degree in pharmaceutical chemistry from Columbia University, and a doctorate degree in biochemistry from the University of Kansas. After receiving his Ph.D., Dr. Thakker held positions at the National Institutes of Health, conducting research in various areas, including research involving drug metabolism. Dr. Thakker later moved to the United States Food and Drug Administration's (FDA) Division of Biochemistry and Biophysics, Center for Drugs and Biologics, where he led a group, had his own research program, and also served as an internal expert to the FDA on the development of biopharmaceuticals.

After several years at the FDA, Dr. Thakker took a position in the Department of Drug Metabolism at Glaxo Inc., where he dealt with issues involving drug absorption, metabolism, excretion, and distribution. Dr. Thakker subsequently became the head of the department in 1990 and Director in 1992. While at Glaxo he had responsibility for supervising over 40 scientists involved in drug discovery and development, including the evaluation of pharmaceutical formulations, such as extended release dosage forms. Dr. Thakker's research at Glaxo also included the impact of efflux transporters on drug absorption, metabolism, and distribution, as well as research in the areas of cytochrome P450 metabolic enzymes.

While working at Glaxo, Dr. Thakker also was an adjunct professor in the Department of Pharmacology, School of Medicine, and Division of Medicinal Chemistry and Natural Products, School of Pharmacy, at the University of North Carolina, Chapel Hill. In 1996 after leaving Glaxo, he was appointed Ferguson Distinguished Professor at the School of Pharmacy, with a joint appointment in the Department of Pharmacology. From 1998 to 2008, he also served as the Associate Dean for Research and Graduate Education and currently serves as the Associate Dean for Economic Development and International Partnerships.

Dr. Thakker's current areas of research include cytochrome P450-mediated drug metabolism, mechanisms of drug absorption across the gastrointestinal epithelium, the interaction of drug metabolizing enzymes and P-glycoprotein efflux transporter, and drug disposition in pediatric populations. He teaches courses in pharmaceutics and drug metabolism to graduate and professional students, and pharmaceutical scientists. Dr. Thakker also consults and lectures on the integration of ADME (absorption, distribution, metabolism, excretion) properties in drug discovery for optimizing clinical drug candidates.

Dr. Thakker also is a Fellow of the American Association of Pharmaceutical Scientists. He has coauthored over 150 articles and numerous textbook chapters in the fields of drug transport mechanisms, drug adsorption, and drug metabolism. He also has served as an editor and currently serves on editorial boards of several peer reviewed journals. Dr. Thakker is an inventor on patents and patent applications in the fields of drug metabolism, absorption enhancers, and screening of drug candidates for metabolic stability.

A more detailed description of Dr. Thakker's professional experience appears in his CV, which is attached as Exhibit E.

6.	Dr. Ronald A. Thisted (live)	
	Department of Health Studies	Department of Statistics
	The University of Chicago	The University of Chicago
	5841 South Maryland Avenue (MC 2007)	5734 University Avenue
	Chicago, Illinois 60637	Chicago, Illinois 60637

Dr. Thisted is a biostatistician and epidemiologist with over thirty years of experience in the design, execution, and analysis of clinical trials. He has a Bachelors degree in Mathematics and Philosophy from Pomona College, and a Master's and Ph.D. in Statistics from Stanford University.

Dr. Thisted has served on the faculty at the University of Chicago since 1976, when he was appointed Assistant Professor in the Department of Statistics. Beginning in 1999, he has served as Chairman of the Department of Health Studies, which encompasses the fields of biostatistics, epidemiology, and health services research. He also holds joint appointments as a Professor at the University in the Departments of Health Studies, Anesthesia and Critical Care, and Statistics. In addition to his own research, Dr. Thisted supervises graduate students in statistics and health studies, and teaches undergraduate, graduate students, medical students, residents and medical fellows in statistical methods, epidemiology and research design. He also

contributes to an advanced course in pharmacoepidemiology, which relates to monitoring the consequences of drug use in a population, and also includes studying side effects.

Dr. Thisted has been regularly involved in the design and statistical analysis of clinical trials since the late 1970s. In this capacity, he serves as Scientific Director of the Biostatistics Core Facility of the University of Chicago Cancer Research Center, where he provides scientific oversight, guidance and management to Ph.D. and Master's level statisticians in the design and analysis of clinical studies for over 50 on-going collaborations. Dr. Thisted also consults with pharmaceutical and medical device companies seeking regulatory approval to market new products in the U.S. and foreign countries. In conjunction with this work he has had numerous interactions with the FDA including pre-NDA meetings to discuss the types of studies and data analyses that will be conducted to support potential approval of a drug, and discussions of specific issues raised by the FDA during the approval process.

Dr. Thisted has authored or co-authored over 90 original articles in peer-reviewed scientific publications, including The New England Journal of Medicine, The Archives of General Clinical Psychiatry, Journal of the American Medical Association, and Journal of the American Statistical Association. He has authored a book in the field of statistical computation, and contributed over 25 book chapters, comments, reviews and other publications to the statistical literature. Dr. Thisted is an elected fellow of the American Association for the Advancement of Science and the American Statistical Association. He is also a member of the American Public Health Association, the Association for Computing Machinery, the Biometric Society, and the Institute of Mathematical Statistics.

A more detailed description of Dr. Thisted's professional experience appears in his CV, which is attached as Exhibit F.

This 6th day of October, 2009.

Respectfully submitted,

By: /s/ John Porco
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**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF WEST VIRGINIA
AT CLARKSBURG**

WYETH,)	
)	Civil Action No. 1:07-CV-91
)	(Judge Irene M. Keeley)
Plaintiff,)	
)	
v.)	
)	
MYLAN PHARMACEUTICALS, INC.)	
)	
Defendant.)	
)	

CERTIFICATE OF SERVICE

I hereby certify that PLAINTIFF WYETH'S BIOGRAPHICAL SKETCHES OF PROPOSED EXPERT WITNESSES was electronically filed with the Clerk of the Court on October 6, 2009, using the CM/ECF system, which will send notification of such filing to the following:

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WYETH, Plaintiff

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Attorneys for Plaintiff

Exhibit A

CV of Dr. Grabowski

VITA

Henry George Grabowski

Office:	Department of Economics Duke University 305 Social Sciences Box 90097 Durham, N.C. 27708-0097	Home:	800 Cedar Falls Road Chapel Hill, N.C. 27514
Telephone:	(919) 660-1839	Telephone:	(919) 929-7023
Fax:	(919) 684-8974		
E-mail:	grabow@econ.duke.edu		

Born: September 20, 1940 in Scranton, Pennsylvania
Married, three children

Education:

Lehigh University, B.S., Engineering Physics, 1962
Princeton University, M.A., Economics, 1964
Princeton University, Ph.D., Economics, 1967

Professional Career:

Assistant Professor in Economics Department, Yale University, 1967-1971
Research Associate, National Bureau of Economic Research, 1971-1972
Associate Professor in Economics Department, Duke University, 1972-1976
Professor in Economics Department, Duke University, 1976-
Research Fellow, International Institute of Management, Berlin, Germany, 1976
Visiting Scholar, Health Care Financing Administration, Office of Research,
Washington, D.C. 1979-1980
Director, Program in Pharmaceuticals and Health Economics, Duke
University, 1983-

Professional Organizations and Board Memberships:

Adjunct Scholar and Advisory Board Member for Health Policy Research,
American Enterprise Institute for Public Policy Research
Board of Scientific Advisors, American Council on Science and Health
Associate Editor, The Quarterly Review of Economics and Finance
Associate Editor, Journal of Research in Pharmaceutical Economics

Major Fields of Interest:

Industrial Organization	Government Regulation of Business
Economics of Innovation	Pharmaceutical Industry-Health
Economics	

Publications

Books and Monographs:

Drug Regulation and Innovation: Empirical Evidence and Policy Options, (American Enterprise Institute for Public Policy Research: Washington, D.C.), 1976.

The Impact of Regulation on Industrial Innovation (with John Vernon) (National Academy of Sciences: Washington, D.C.), 1979.

The Regulation of Pharmaceuticals: Balancing the Benefits and Risks (with John Vernon) (American Enterprise Institute for Public Policy Research: Washington, D.C.), 1983.

Health Reform and Pharmaceutical Innovation (American Enterprise Institute for Public Policy Research: Washington, D.C.), 1994.

The Search for New Vaccines: The Effects of the Vaccines for Children Program, (American Enterprise Institute for Public Policy Research: Washington, D.C.), 1997.

Articles:

"A Graph-Oriented Model for Research Management," (with Oscar Morgenstern and R. W. Shepherd), in M. C. Yovits, D. M. Gilford, E. Staveley, and H. D. Lerner, eds., Research Program Effectiveness, (Gordon and Breach: New York), 1966, pp. 187-216.

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"The Effects of Advertising on the Interindustry Distribution of Demand," in Occasional Papers of National Bureau of Economic Research, Explorations in Economic Research, Vol. 3, Winter 1976, pp. 21-75.

"The Effects of Regulatory Policy on the Incentives to Innovate: An International Comparative Analysis," (with John Vernon and Lacy Glenn Thomas), in Emery A. Link and Samuel Mitchell, eds., Impact of Public Policy on Drug Innovation and Pricing, (American University: Washington, D.C.), 1976, pp. 47-93.

"Consumer Protection Regulation in Ethical Drugs," (with John Vernon), American Economic Review, Vol. 67, February 1977, pp. 359-364.

"Estimating the Effects of Regulation on Innovation: An International Comparative Analysis of the Pharmaceutical Industry," (with John M. Vernon and Lacy Glenn Thomas), Journal of Law and Economics, Vol. 21, No. 1, April 1978, pp. 133-163.

"The Effects of Advertising on IntraIndustry Shifts on Demand," in Occasional Papers of National Bureau of Economic Research, Explorations in Economic Research, Vol. 4, No. 5, Fall 1978, pp. 675-701.

"Consumer Product Safety Regulation," (with John M. Vernon), American Economic Review, Vol. 68, May 1978, pp. 284-289.

"Industrial Research and Development, Intangible Capital Stocks, and Firm Profit Rates," (with Dennis Mueller), Bell Journal of Economics, Vol. 9, No. 2, Fall 1978, pp. 328-343.

"New Studies on Market Definition, Concentration, Theory of Supply, Entry and Promotion," (with John M. Vernon), in Robert I. Chien, ed., Issues in Pharmaceutical Economics, (Lexington Books: Lexington, Mass.), 1979, pp. 29-52.

"Regulation of the United States Pharmaceutical Industry: Current Problems and Policy Developments," in George Teeling-Smith, ed., Medicines for the Year 2000, (Office of Health Economics: London, England), 1979, pp. 57-74.

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"Public Policy and Innovation: The Case of Pharmaceuticals," Technovation, Vol. 1, 1982, pp. 157-189.

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"The Impact of Patent and Regulatory Policies on Drug Innovation," Medical Marketing & Media, Vol. 18, No. 10, October 1983, pp. 42-63.

"A Computer Simulation Model of Pharmaceutical Innovation," (with John Vernon), in Bjorn Lindgren, ed., Pharmaceutical Economics, (Swedish Institute for Health Economics and Liber Forlag: Lund, Sweden), 1984, pp. 159-175.

Studies on Drug Substitution, Patent Policy and Innovation in the Pharmaceutical Industry, Final report to the National Science Foundation available from the National Technical Information Services, Number PB-85-109700, Washington, D.C., 1985.

"Organizational Capital and the Choice between Specialization and Diversification," (with Michael Gort and Robert McGuckin), Managerial and Decision Economics, Vol. 6, No. 1, March 1985, pp. 2-10.

"Economic Aspects of Vaccine Innovation and Manufacturing," (with Lawrence De Brock), Chapter 4, in Vaccine Supply and Innovation, (National Academy Press: Washington, D.C.), 1985, pp. 45-64.

"Longer Patents for Lower Imitation Barriers: The 1984 Drug Act," (with John Vernon), The American Economic Review, Vol. 76, May 1986, pp. 195-198.

"Health Care Cost Containment and Pharmaceutical Innovation," in Proceedings of the Conferences on Health Care and the Elderly, (Washington, D.C.), 1986, pp. 25-28.

"Pioneers, Imitators, and Generics--A Simulation Model of Schumpeterian Competition," (with John Vernon), The Quarterly Journal of Economics, August 1987, pp. 491-525.

"The Health/Economic Benefits of Drug Therapy: Efficacy, Low Risk, Cost Effectiveness, Patient Information and Emancipation," Swiss Pharma, Vol. 9, No. 3a, 1987, pp. 29-31.

"Impact of Patent and Regulatory Policies on Drug Innovation," Proceedings of the Second Annual Shearson Lehman Hutton Conference on Legal and Regulatory Issues Affecting Biotechnology and Health Care, (Shearson Lehman Hutton, Inc.: New York), October 1988, pp. 5-16.

"Medicaid Patients' Access to New Drugs," Health Affairs, Winter 1988, pp. 102-114.

"Price and Availability Tradeoffs of Automobile Insurance Regulation," (with W. Kip Viscusi and William N. Evans), Journal of Risk and Insurance, Vol. LVI, No. 2, June 1989, pp. 275-299.

"An Analysis of U.S. International Competitiveness in Pharmaceuticals," Managerial and Decision Economics, Special Issue, 1989, pp. 27-33.

"Economic Scales and Tests," (with Ronald W. Hansen), in B. Spilker, ed., Quality of Life Assessments in Clinical Trials, (Raven Press, Ltd.: New York), 1990, pp. 61-69.

"Innovation and International Competitiveness in Pharmaceuticals," in Arnold Heertje and Mark Perlman, eds., Evolving Technology and Market Structure: Studies in Schumpeterian Economics, (University of Michigan Press), 1990, pp. 167-185.

"A New Look at the Returns and Risks to Pharmaceutical R&D," (with John Vernon), Management Science, Vol. 36, No. 7, July 1990, pp. 804-821.

"The Changing Economics of Pharmaceutical Research and Development," in Annetine C. Gelijns and Ethan A. Halm, eds., The Changing Economics of Medical Technology, (National Academy Press: Washington, D.C.), 1991, pp. 35-52.

"Product Liability in the Pharmaceuticals: Comments on Chapters Eight and Nine," in Peter W. Huber and Robert E. Litan, eds., The Liability Maze: The Impact of Liability Law on Safety and Innovation, (Brookings Institution: Washington, D.C.), 1991, pp. 360-366.

"The Cost of Innovation in the Pharmaceutical Industry," (with Joseph DiMasi, Ronald Hansen and Louis Lasagna), Journal of Health Economics, Volume 10, 1991, pp. 107-142.

"Pharmaceutical Research and Development: Returns and Risk," Sixth Annual Centre for Medicines Research Lecture 1991, Centre for Medicines Research, Surrey, England, 1991.

"The Effect of Medicaid Formularies on the Availability of New Drugs," (with Stuart O. Schweitzer and S. Renee Shiota), PharmacoEconomics, Vol. 1 (Suppl. 1), 1992, pp. 32-40.

"The Costs and Returns to Pharmaceutical Research and Development," Rivista Internazionale di Scienze sociali, (International Social Studies Review), September 1992, pp. 347-358.

"Brand Loyalty, Entry and Price Competition in Pharmaceuticals After the 1984 Drug Act," (with John M. Vernon), Journal of Law and Economics, Vol. 35, No. 2, October 1992, pp. 331-350.

"Pharmaceuticals and Health Care Costs," Proceedings of the First International Health Care Forum, Health Care Policy and the Pharmaceutical Industry, Gotemba, Japan, 1993.

"Health Reform and Pharmaceutical Innovation," Seton Hall Law Review, Vol. 24, No. 3, 1994, pp. 1221-1259.

"Innovation and Structural Change in Pharmaceuticals and Biotechnology," (with John Vernon), Industrial and Corporate Change, Vol. 3, No. 2, 1994, pp. 435-449.

"Returns to R&D on New Drug Introductions in the 1980s," (with John Vernon), Journal of Health Economics, Vol. 13, 1994, pp. 383-406.

"Research and Development Costs for New Drugs by Therapeutic Category: A Study of the U.S. Pharmaceutical Industry," (with Joseph A. DiMasi, Ronald W. Hansen, and Louis Lasagna), PharmacoEconomics, Vol. 7, No. 2, 1995, pp. 152-169.

"Economic Evaluation of Drug Treatment for Psychiatric Disorders: The New Clinical Trial Protocol," (with Gary Zarkin, Josephine Mauskopf, Heather A. Bannerman, and Richard H. Weisler), Chapter 161, in Floyd E. Bloom and David J. Kupfer, eds., Psychopharmacology: The Fourth Generation of Progress, (Raven Press, Ltd.: NY), 1995, pp. 1897-1905.

"R&D Costs, Innovative Output and Firm Size in the Pharmaceutical Industry," (with Joseph A. DiMasi and John Vernon), International Journal of the Economics of Business, Vol. 2, No. 2, 1995, pp. 201-219, (special volume honoring Merton J. Peck of Yale University).

"Price and Profit Control, New Competitive Dynamics and the Economics of Innovation in the Pharmaceutical Industry," in Adrian Towse, ed., Industrial Policy and the Pharmaceutical Industry, (Office of Health Economics: London), 1995, pp. 77-91.

"Economic Scales and Tests," (with Ronald W. Hansen), in B. Spilker, ed., Quality of Life and Pharmacoeconomics in Clinical Trials, Second Edition, (Lippincott-Raven Press: Philadelphia), 1996, pp. 79-84.

"Returns to Pharmaceutical R&D: Prospects Under Health Care Reform," (with John Vernon), in Robert Helms, ed., Competitive Strategies in the Pharmaceutical Industry, (AEI Press: Washington, D.C.), 1996, pp. 194-207.

"Longer Patents for Increased Generic Competition: The Waxman-Hatch Act After One Decade," PharmacoEconomics, Vol. 10, Suppl. 2, 1996, pp. 110-123.

"The Effect of Pharmacoeconomics on Company Research and Development Decisions," Pharmacoeconomics Vol. 11, No. 5, May 1997, pp. 389-397.

"The Impact of Cost-Effectiveness on Public and Private Policies in Health Care: An International Perspective," (Edited Symposium Volume with Frank Sloan), in Social Science & Medicine, Vol 45, No. 4, August 1997.

"Pharmacy Benefit Management, Cost-Effectiveness Analysis and Drug Formulary Decisions," (with C. Daniel Mullins), Social Science & Medicine, Vol. 45, No. 4, August 1997, pp. 535-544.

"Public Policy and Innovation in Pharmaceuticals and Biotechnology," in Demetri

Kantarelis, editor, Business and Economics for the 21st Century, Volume I, Business and Economic Society International, Worcester, Mass., 1997, pp. 343-349.

"The Role of Cost-Effectiveness Analysis in Managed Care Decisions," Pharmacoeconomics, Vol. 14, suppl. 1, 1998, pp. 15-24.

"The Determinants of Pharmaceutical Research and Development Expenditures," (with John Vernon), Journal of Evolutionary Economics, Vol. 10, 2000, pp. 201-215.

"Effective Patent Life in Pharmaceuticals," (with John Vernon), International Journal of Technology Management, Vol. 19, Nos. 1/2, 2000, pp. 98-120.

"The Distribution of Sales from Pharmaceutical Innovation," (with John Vernon) Pharmacoeconomics, Vol. 18, suppl. 1, 2000, pp. 21-32.

"Pressures from the Demand Side: Market Dynamics and Industrial Structures," (with John Vernon), in Hannah Kettler, ed., Consolidation and Competition in the Pharmaceutical Industry, Office of Health Economics, London, 2001, pp. 62-79.

"Returns on Research and Development for 1990s New Drug Introductions," (with John Vernon and Joe DiMasi). Pharmacoeconomics, Vol. 20, Supplement 3, 2002.

"Patents, Innovation and Access to New Pharmaceuticals," Journal of International Economics Law Vol 5, No. 4, December 2002, pp 849-860.

"Patents and New Product Development in the Pharmaceuticals and Biotechnology Industries," in John Duca, ed., Science and Cents: the Economics of Biotechnology, Federal Reserve Bank of Dallas, 2003.

"The Price of Innovation: New Estimates of Drug Development Costs," (with Joseph DiMasi and Ronald Hansen). Journal of Health Economics, Vol. 22, 2003, pp.141-185.

"The Ripple Effects of a Restrictive Medicaid Formulary (editorial), American Journal of Managed Care, Vol. 9, No. 10, October 2003, pp. 648-649.

"Are the Economics of Pharmaceutical R&D Changing? Productivity, Patents and Political Pressures," Pharmacoeconomics, Vol. 22, Suppl. 2, 2004, pp. 15-24.

"R&D Costs and Returns by Therapeutic Category" (with Joseph DiMasi and John Vernon), Drug Information Journal, Vol. 38, No. 3, 2004, pp. 211-223.

"Increasing R&D Incentives for Neglected Diseases: Lessons from the Orphan Drug Act," in Maskus KE and Reichman JH, eds., International Public Goods, and Transfer of

Technology Under a Globalized Intellectual Property Regime, Cambridge University Press, 2005, pp. 457-480.

"Encouraging the Development of New Vaccines," Health Affairs, Vol. 24, No. 3, 2005, pp. 697-704.

"Extraordinary Claims Require Extraordinary Evidence," and "Setting the Record Straight on Setting the Record Straight: Response to Light and Warburton's Rejoinder," (with Joseph DiMasi and Ronald Hansen) Journal of Health Economics, 2005 Vol. 24, No.5, pp. 1034 and 1049.

"Developing Drugs for Developing Countries," (with David Ridley and Jeffrey Moe) Health Affairs March/April 2006 Vol. 25 No. 2, pp 313-324. .

"Entry and Competition in Generic Biologics" (with David Ridley and Kevin Schulman), forthcoming in Managerial and Decision Economics, 2006.

"The Quantity and Quality of Worldwide New Drug Introductions 1982 – 2003" (with Richard Wang), Health Affairs, March/April 2006, Vol. 25 No. 2, pp. 452-460.

"Generic Competition in the U.S. Pharmaceutical Industry" (with Atanu Saha, Howard Birnbaum, Paul Greenberg, and Oded Bizan), forthcoming in International Journal of the Economics of Business, 2006.

"How Did the 2003 Prescription Drug Re-Importation Bill Pass the House?" (with Omar Gobcalasis, Mike Adams and Edward Tower), forthcoming in Economics and Politics, 2006.

"Spending on Post-approval Drug Safety" (with David Ridley, Judith Kramer, Hugh Tilson, and Kevin Schulman), in Health Affairs, March/April, 2006, Vol. 25 No. 2, pp. 429-436.

Papers Presented at Major Professional Conferences:
(Selected Presentations since 1990)

"Brand Loyalty, Entry, and Price Competition after the 1984 Act," Applied Econometric Association Meetings, Ankara, Turkey, June, 1990; also, Second World Congress in Health Economics, Zurich, Switzerland, September 1990.

"First Mover Advantages, Price and Non-Price Competition in Pharmaceuticals," American Economic Association Meetings, December 1990.

"International Competition in Pharmaceutical R&D," National Science Board on Industrial

Support for R&D, U.S. National Science Foundation, Washington, D.C., January 1991.

"Research and Development in an Era of Global Competition," Conference on American Pharmaceuticals in the Global Village, U.S. Department of State, Washington, D.C., June 1991.

"Pharmaceutical Research and Development: Returns and Risk," Centre for Medicines Research Annual Lecture 1991, Royal College of Physicians, London, England, July 1991.

"The Effect of Medicaid Formularies on the Availability of New Drugs," Tufts University Conference, Cost Containment and Pharmaceuticals: Issues for Future Research, Talloires, France, July 1991.

"Innovative Structure and Performance of the Pharmaceutical Industry," Second International Conference on the Economics of Innovation, University of Milan, Piacenza, Italy, June 1992.

"Pharmaceuticals and Health Care Costs," International Health Care Forum on Health Care Policy and the Pharmaceutical Industry, Gotemba, Japan, October 1992.

"Innovation and Structural Change in Pharmaceuticals and Biotechnology," American Economic Association Meetings, Anaheim, California, January 1993.

"Pharmaceutical R&D Costs, Prices and Profits," Conference on Pharmaceutical Industry Research, Innovation and Public Policy, Harvard University, John F. Kennedy School of Government, February 1993.

"Pharmaceutical R&D Returns: Prospects Under Health Care Reform," American Enterprise Institute Conference on Competitive Strategies in the Pharmaceutical Industry, October 1993.

"Health Care Reform--Implications for Pharmaceutical Innovation," Drug Information Association Workshop on Health Economics, Lisbon, Portugal, November 1993.

"The Administration's Health Reform Plan--Implications for Pharmaceutical Innovation," testimony before Congressman Waxman's House Subcommittee on Health and the Environment, February 1994.

"Socially Optimal Reimbursement and Utilization Policies for Pharmaceuticals," Hungarian National Social Insurance Administration, Budapest, Hungary, April 1994.

"Pharmaceuticals and Quality of Life: An Economist's Perspective," Forum Engelberg, Engelberg, Switzerland, April 1994.

"Price and Profit Control, New Competitive Dynamics and the Economics of Innovation in the Pharmaceutical Industry," Office of Health Economics Symposium on Industrial Policy, London, England, June 1994.

"Health Reform and Pharmaceutical Innovation," American Enterprise Institute, Washington, D.C., July 1994.

"R&D Costs, Innovational Output and Firm Size," Yale University Festschrift Honoring Merton J. Peck, New Haven, Connecticut, September 1994.

"The Effects of Increased Government Purchases on Vaccine R&D," testimony before the Subcommittee on Health and the Environment on the Vaccines for Children's Program, June 1995.

"PharmacoEconomics and Pharmaceutical Innovation," to IFPMA Conference on PharmacoEconomics in the year 2000, Geneva, Switzerland, February 1995.

"Development of New Pharmaceuticals," to the Third Princeton Conference on Drug Discovery and Development, Princeton, New Jersey, May 1995.

"Longer Patents for Increased Generic Competition: The Waxman-Hatch Act After One Decade," Tufts University Conference on Cost Containment Health Care Reform and Pharmaceutical Innovation, Talloires, France, July 1995.

"The Roles of Government in the Drug Regulation Process: Lessons from Other Nations," presented to Conference on Health Financing and Health Economics, Beijing, China, October 1995.

"The Use of Cost-Effectiveness Analysis by Pharmaceutical Benefit Management Companies," to Duke University Conference on Cost-Effectiveness Analysis in Decision Making," November 1995.

"The Effects of the Waxman Hatch Act on Drug Innovation and Generic Competition," Testimony before the U.S. Senate Judiciary Committee, March 1996.

"International Patent Policies and Pharmaceutical Innovation," to University of Vienna, May 1996.

"Public Policies and Pharmaceutical Innovation" to Jagellion University, Krakow, Poland, May 1996.

"Financing Health Care in Pharmaceuticals and Biotechnology," to OECD Workshop,

Paris, July 1996.

"Health Care and Innovation" to Seminar on Approaches to Cost Containment in Health Care, Kasteel de Willenburg, The Hague, October 1996.

"Pharmaceutical Innovation, Cost-Effectiveness Research and Emerging Regulatory Issues," American Enterprise Institute, Washington, D.C., November 1996.

"The Role of Cost-Effectiveness Analysis in Managed Care," Tufts University Center for the Study of Drug Development Conference, Talloires, France, July 1997.

"Public Policy and Innovation in Pharmaceuticals and Biotechnology," Business and Economics Society International Conference, Athens, Greece, July 1997.

"The Determinants of Pharmaceutical Research and Development Expenditures," Schumpeterian Society Meetings, Vienna, Austria, June 1998.

"Effective Patent Life in Pharmaceuticals," U.S. House of Representatives Colloquium for House Staff Members, June 1999.

"The Distribution of Sales from Pharmaceutical Innovation," Schumpeterian Society Meetings, Manchester England, June, 2000.

"New Research on the Returns to Pharmaceutical R&D," American Enterprise Institute, Washington, D.C., October 2000.

"Patent Policy Issues in Pharmaceuticals" Robert Wood Johnson Foundation Colloquium on the Pharmaceutical Industry, Washington, D.C., March 2001.

"Returns to Pharmaceutical R&D in the 1990s" Tufts University Conference, Center for the Study of Drug Development, Talloires France, July, 2001.

"Patents, Innovation and Access to New Pharmaceuticals," American Association for the Advancement of Science, Annual Meetings, Boston, February 2002.

"Patents and the Development of New Pharmaceuticals in Pharmaceuticals and Biotechnology Industry," Federal Reserve Bank of Dallas, April 2002.

"Returns to Pharmaceutical R&D," American Economic Association Meetings, Washington, DC, January 2003.

"Increasing R&D Incentives for Neglected Diseases," Duke University Law School Conference, April 2003; St. Vincent's College, September 2003; Georgetown University,

October 2003, Columbia University, December 2003.

"Are the Economics of Pharmaceutical R&D Changing? Productivity, Patents, and Political Pressures," Tufts University Center for the Study of Drug Development Conference, Talloires, France, July 2003.

"Global Returns on R&D From New Drug Introductions," Keio University, Tokyo, Japan, September 2003.

"R&D Costs and Returns by Therapeutic Category," Southern Economic Association Meetings, San Antonio, Texas, November 2003.

"The Hatch-Waxman Act and Drug Innovation," Food and Drug Law Institute Conference, Washington, DC, December 2004.

"Developing Drugs for Developing Countries," American Economic Association Meetings, Philadelphia, PA, January 2005; also International Health Economics Congress, Barcelona, Spain, July 2005.

"Generic Competition in Pharmaceuticals," International Conference on Pharmaceutical Innovation, Taipei, Taiwan, May 2005.

"Impact of Generic Competition on Pharmaceutical Markets," International Health Economics Congress, Barcelona, Spain, July 2005.

Research Grants and Government Projects:

Principal Investigator, National Science Foundation Grant to Yale University, "Collaborative Research on Determinants of Selected Firm Outlays," June 1969 - December 1970. (\$9,800.00)

Principal Investigator, National Science Foundation Grant to NBER for research on "The Returns to Firm Investment Outlays, Plant and Equipment and Advertising Outlays," 1972-1974. (\$47,900.00)

Principal Investigator, National Science Foundation Grant for Research on "The Effect of Product Quality Regulation on Innovation: The Case of the U.S. Ethical Pharmaceutical Industry," 1975-1978. (\$111,700.00)

Consultant, Federal Trade Commission project on "The Effects of Repealing Anti-Substitution Laws on Drug Innovation," 1977-1978.

Study Rapporteur, National Academy of Sciences Committee on Technology and International Economic and Trade Issues, "The Impact of Government Regulation on Innovation," 1978-1979.

Principal Investigator, National Science Foundation Grant to Duke University for "Studies on Drug Substitution, Patent Policy and Innovation," 1979-1982. (\$125,979.00)

Advisory Panel Member, Office of Technology Assessment, The Patent System and Its Assessment on New Technological Enterprises, 1982-1983.

Principal Investigator, Environmental Protection Agency Grant to Investigate the Effects of Regulation on Innovation in Pesticides, (with Kip Viscusi of the Fuqua School of Business), 1983-1984.

Member, Committee on Public-Private Sector Relations in Vaccine Innovation," Institute of Medicine, National Academy of Sciences, 1983-1985.

Principal Investigator, General Accounting Office, Research Project on the Effects of Different State Regulations on Automobile Insurance Premiums and Availability, 1984-1985.

Principal Investigator, Duke University, Program in Pharmaceuticals and Health Economics, Project on Cost Containment and Pharmaceutical Innovation, 1985-1991.

Principal Investigator, Duke University, Program in Pharmaceuticals and Health Economics, Project on Returns to Pharmaceutical R&D, 1990-1994.

Principal Investigator, Program in Pharmaceuticals and Health Economics, "Public Policy and Innovation in the Vaccine Industry," 1995-1997.

Principal Investigator, Program in Pharmaceuticals and Health Economics, "New Research on the Costs and Returns to R&D," 1998-2002.

Principal Investigator, "Increasing R&D Incentives for Neglected Diseases," 2002-2005.

Henry Grabowski

May 30, 2007

Companies for which I have consulted over the past year

Allergan

Amgen

Astra-Zeneca

Brystol-Myers Squibb

Elan Pharmaceuticals

Endo Pharmaceuticals

Fujisawa Pharmaceuticals

Genentech

Glaxo-SmithKline

Johnson & Johnson

Merck

Novartis

Pfizer

Roche

Shire Pharmaceuticals

UCB

Valeant Pharmaceuticals

Warner-Chillcott

Wyeth

Exhibit 3

Testimony Since 2003:

Arbitration hearing, *NeoPharm, Inc. v. Pharmacia & Upjohn Co.*, Washington, DC, December 2003 (confidential).

Deposition, *New River Pharms v DSM Pharms*, U. S. District Court for the Eastern District of Tennessee, March 2004.

Deposition, *Sanofi-Synthelabo et. al v. Apotex, Inc.*, U. S. District Court for the Southern District of New York, November 2004.

Deposition, *In re Bristol-Myers Squibb Securities Litigation*, Civil Action No. 00-1990, (SRC) U. S. District Court for the District of New Jersey, January 2005.

Deposition, *Wyeth v. Teva Pharmaceuticals*, Civil Action No., 03-1293 (KSH), U. S. District Court for the District of New Jersey, June 2005.

Deposition, *Xcel Pharmaceuticals v. Kali Laboratories*, U. S. District Court for the District of New Jersey, May 2006.

Deposition, *Pfizer Inc. v. Teva Pharmaceuticals*, U.S. District Court for the District of New Jersey, Civil Action No. 04-754 (JCL) August 2006. Testimony December 2006

Deposition, Arbitration Hearing, *Elan Pharmaceuticals v. King Pharmaceuticals*, New York, NY August 2006.

Arbitration Testimony, *Elan Pharmaceuticals v. King Pharmaceuticals*, New York, NY September 2006.

Deposition, *UCB S.A., et al., v. Mylan Laboratories, Inc., et al.*, United States District Court for the Northern District of Georgia, Civil Action No: 1:04-CV-0683 (WSD) December 2006.

Deposition, *State of Colorado, et al., v. Warner Chilcott Holdings Company III, LTD., et al.*, United States District Court for the District of Columbia, Civil Action No: 1:05CV02182 (CKK) January 2007.

Exhibit B

CV of Dr. Hollander

CURRICULUM VITAE

ERIC HOLLANDER, MD, DFAPA, FACNP

Present Positions: Esther and Joseph Klingenstein Professor and Chair
Director-NIH STAART Greater New York Autism Center of Excellence
Director-Seaver Autism Research Center
Director-Compulsive, Impulsive and Anxiety Disorders Program
Director-Clinical Psychopharmacology
Department of Psychiatry
Mount Sinai School of Medicine
One Gustave L. Levy Place, Box 1230
New York, N.Y. 10029

Telephone Number: 212/659-8287
FAX Number: 212/987-4031
E-Mail: eric.hollander@mssm.edu

Born: Los Angeles, California (6/19/57)

Education:

1978	B.A.	Brandeis University, Waltham, MA
1982	M.D.	State University of New York Downstate Medical College, Brooklyn, NY

Internship:

1982 - 1983	Internal Medicine	Mount Sinai Hospital, NY, NY
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Residency:

1983 - 1986	Psychiatry	Mount Sinai Hospital, NY, NY
1985 - 1986	Chief Resident- Psychiatry Research	Clinical Research Unit and Alzheimer's Disease Research Center - Mount Sinai School of Medicine, NY, NY

Fellowship:

1986 - 1988	NIMH Psychiatry Research Fellowship	Columbia University College of Physicians & Surgeons and NYS Psychiatric Institute
1988 - 1989	Dana Foundation Fellow	Columbia University
1988 - 1993	NIMH Research Scientist Development Award	Columbia University

Licensure:

New York State License: 155389 Year: 1983

DEA License: AH2289420

Diplomate - American Board of Psychiatry and Neurology (29504) 1987

Honors:

2007, William A. Console, MD Master Teacher Award in Psychiatry
Alumni Association, College of Medicine, SUNY Downstate Medical Center

2005, Best Doctors, NY Magazine

2005, Chair - NIH STAART Autism Steering Committee

2005, Secretary/Treasurer - International Society for Research In Impulsivity (ISRI)

2005, Director – International College of Obsessive Compulsive Spectrum Disorders (ICOCS)

2005, Chair – DSM-V Research Planning Agenda Workgroup on Obsessive Compulsive Behavior Spectrum Disorders

2005, Member – APA Practice Guidelines – Obsessive Compulsive Disorder

2003, Distinguished Fellow – American Psychiatric Association

2003, Substance Abuse and Mental Health Administration (SAMHSA)
National Registry of Effective Prevention Programs (NREPP), U.S. Department
Of Health and Human Services

2003, Best Doctors, *New York Magazine*

2002, Fellow – American College of Neuropsychopharmacology

2002 – present, Chair - DSM-V Work Group on Obsessive Compulsive Spectrum Disorders, APA

2002, Best Doctors In America

2002, Autism Clinical Trials Task Force, Cure Autism Now (CAN)

2002, Best Doctors, *New York Magazine*

2001, Best Doctors, *New York Magazine*

2001, Best Doctors, *New York Post*

2000-2001, Society of Biological Psychiatry, George N. Thompson Award Committee

1999, Fellow, American Psychiatric Association

1998, NARSAD Distinguished Investigator Award

1998, Full Membership, American College of Neuropsychopharmacology

1999, Section Editor, ACNP, Neuropsychopharmacology: The Fifth Generation of Progress

1998, DSM-IV-R Work Group Chair, Impulse Control Disorder Section

1998, Nolan D.C. Lewis Visiting Professor and Scholar, Carrier Foundation

1997, Scientific Director, CNS Research Foundation

1996, Founding Editor
CNS Spectrums: The International Journal of Neuropsychiatric Medicine

1996, Scientific Advisory Board, Anxiety Disorders Association of America

1994, Best Mental Health Specialists in the U.S.A. - Good Housekeeping

1994, The Best Doctors in America, Woodward/White, Inc.

1993, Chairman, OC Foundation Awards Committee

1993, International OCD Council Founding Member

1993, Secretary, OCD Section, World Psychiatric Association

1992, Member, DSM-IV Work Group - Obsessive Compulsive Disorder

1992, Member, DSM-IV Work Group - Body Dysmorphic Disorder

1992, Scientific Advisory Board, OC Foundation

1991, American College of Neuropsychopharmacology, Associate Member

1990, American Psychiatric Association/Wisniewski Young Psychiatrist Research Award, First Place, New York, NY

1990, Collegium Internationale Neuro-Psychopharmacologium
Rafaelsen Fellowship Award, Kyoto, Japan

1988-1993, Research Scientist Development Award
National Institute of Mental Health

1988-1989, Dana Foundation Fellow (Columbia University)

1986, American Psychiatric Association/Penwalt Resident Research Award, First Place, Washington, DC

1986, Marcel Heiman Memorial Award for Outstanding Research
Mount Sinai School of Medicine, Department of Psychiatry

1986, M. Ralph Kaufman Prize, Outstanding Resident in Psychiatry
Mount Sinai School of Medicine, Department of Psychiatry

1985-1986, Solomon W. Ginsburg Fellow: Group for the Advancement of Psychiatry

1978, General Honors, Brandeis University

Patents and Inventions:

Oxytocin in Autism and Social Attachment Disorders (US patent issued)

Mementine in Autism, Compulsive and Impulsive Disorders (US patent application)
Fluoxetine in Autism (Orphan Designation: Food and Drug Administration)
Internet Addiction - YBOCS (US Copyright)
Pathological Gambling – YBOCS (US Copyright)
Fluvoxamine Gambling Treatment Program (SAMHSA)

Founding Editor: *CNS Spectrums: The International Journal of Neuropsychiatric Medicine*

Editorial Advisory Board: *Neuropsychopharmacology (1997 – 1999)*
Research In Autism Spectrum Disorders
World Journal of Biological Psychiatry
Medscape Psychiatry & Mental Health
Psychiatric Annals
Focus on OCD
Primary Psychiatry (past)
Mental Fitness
International Journal of Psychiatry in Clinical Practice
Journal of Gambling Studies
Wager
Clinical Neuropsychiatry
Contemporary Psychiatry
Mount Sinai Journal of Medicine (Associate Editor)

Reviewer: *Archives of General Psychiatry*
American Journal of Psychiatry
Biological Psychiatry
Psychiatry Direct
Psychiatry Research
Journal of Neuropsychiatry and Clinical Neuroscience
Journal of the American Medical Association
Journal of Nervous and Mental Disorders

Hospital Appointments:

1986 - 1992 Assistant Attending Psychiatrist, The Presbyterian Hospital

1992 - 1993 Associate Attending Psychiatrist, The Presbyterian Hospital

1988 - 1993 Attending Psychiatrist, The New York State Psychiatric Institute

1988 - 1993 Director, Obsessive Compulsive Disorder Biological Studies Program
The New York State Psychiatric Institute

1989 - 1993 Director, Anxiety Diagnostic & Recruitment Unit, NYS Psychiatric Institute

1993 - 1994 Associate Director, Academic Affairs, Queens Hospital Center

1993 - 1994 Vice Chairman, Department of Psychiatry, Mount Sinai School of Medicine

1993 - Present Director, Clinical Psychopharmacology, Mount Sinai School of Medicine

1994 - 2003 Clinical Director, Seaver Autism Research Center

1994 - Present Director, Compulsive, Impulsive and Anxiety Disorders Program

1996 - Present Attending Psychiatrist, The Mount Sinai Hospital

2003 - Present Director, Seaver Autism Research Center

2003 - Present Director, Greater NY Autism Research Center of Excellence

Academic Appointments:

1986 - 1988 Instructor in Clinical Psychiatry, Columbia University P & S

1988 - 1992 Assistant Professor of Clinical Psychiatry, Columbia University P & S

1992 - 1993 Associate Professor of Clinical Psychiatry, Columbia University P & S

1993 - 1996 Associate Professor of Psychiatry, Mount Sinai School of Medicine

1996 - Present Professor of Psychiatry, Mount Sinai School of Medicine

Teaching (Mount Sinai School of Medicine and Columbia University P & S):

Phenomenology Course – PGY II Residents

Neuroscience Course – PGY III Residents

Outpatient Psychopharmacology Course - PGY III Residents

Psychopharmacology Supervision - PGY III Residents

Anxiety Disorder Lectures - MS I and MS II Medical Students

OCD Lectures - PGY II and III Psychiatry and Neurology Residents

Neuroscience Review Course - Neurology Department

Outpatient Psychopharmacology Clinic - PGY III Residents

OCD CME Course Director - 8 Conferences at Mt. Sinai and Columbia

Journal Club and Grand Rounds - chair, Mt. Sinai/Queens Hospital Center

Pharmacology Lectures - MS IV Medical Students

Chairman and Organizer, 7 Conferences on the Diagnosis, Neurobiology, Genetics and Treatment of Autism in association with CAN, NAAR, ASA, and NARSAD

Chairman and Organizer

- First International Conference on OCD, Capri, March 1993
- Second International Conference on OCD, Guadeloupe, March 1996
- Third International Conference on OCD, Madeira, Portugal, 1998
- Fourth International Conference on OCD, St. Thomas, V.I., 2000
- Fifth International Conference on OCD, Sardinia, 2001
- Sixth International Conference on OCD, Lanzarote, 2003

Participant, Anxiety Disorders in African-Americans Conference, 1993

Fellowship Supervisor, Program for Minority Research Training in Psychiatry
American Psychiatric Association

Professional Organizations:

Academia, Medicina & Psychiatria Foundation (Fellow)

American College of Neuropsychopharmacology

Fellow (2002)

Member (1998-Present)

Finance Committee (1999-present)

Section Editor, ACNP, Psychopharmacology: The Fifth Generation of Progress

Editorial Advisory Board, Neuropsychopharmacology

Associate Member (1992-1996)

American Federation for Clinical Research

American Medical Association

American Psychiatric Association (Distinguished Fellow)

Member, Committee on Resident Research Award Review

American Psychopathological Association

American Society of Clinical Psychopharmacology

Anxiety Disorders Association of America (Scientific Advisory Board)

Asociacion Argentina de Trastornos de Ansiedad

Collegium Internationale Neuro-Psychopharmacologicum

European College of Neuropsychopharmacology - Corresponding Member

Group for the Advancement of Psychiatry

Solomon Ginsburg Fellow (1985-1986), Medical Education Committee

International College of Obsessive Compulsive Spectrum Disorders (Company Director)

International Council on OCD (Founding Member)

International Society for Research on Impulsivity and Impulse Control Disorders
President Elect - 2006
(Secretary Treasurer - FY2005)

National Board of Medical Examiners (Test Material Development Committee)

Obsessive Compulsive Foundation (Scientific Advisory Board)

Society of Biological Psychiatry
Scientific Program Committee
George N. Thompson Award Committee

World General Medical Council (Fellow)

World Health Organization Committee on Priority Treatments for Mental Health Disorders
Priority Treatments for Obsessive Compulsive Disorder

Consulting:

US Congress and Senate, Joint Committee on NIH Funding Issues

Psychopharmacology Consult, Health and Hospitals Corporation

Scientific Advisory Boards

Obsessive Compulsive Foundation
Anxiety Disorders Association of America
CNSR Foundation
Autism Society of America Foundation
QSAC
NAMI
Cure Autism Now

Scientific Advisory Boards

Solvay Pharmaceuticals
Abbott Neuroscience
Wyeth-Ayerst Laboratories
SmithKline Beecham
Lilly Neuroscience
Ortho-McNeil
Roche Laboratories
Pfizer Pharmaceuticals
Pharmacia/Upjohn
Callisto Pharmaceuticals, Inc.
Somaxan Pharmaceuticals

Medical Lecture Program/Speakers Program

Abbott Pharmaceuticals
Bristol Myers/Squibb Pharmaceuticals
Eli Lilly and Company

Forrest Pharmaceuticals
GlaxoSmithKline
Novartis Pharmaceuticals
Pfizer Pharmaceuticals
Pharmacia/Upjohn
Smith Kline Beecham
Solvay Pharmaceuticals
Wyeth Ayerst Laboratories

First International OCD Conference Organizer - Solvay/Upjohn - 1993, Capri
Second International OCD Conference Organizer - Solvay/Upjohn - 1996, Guadeloupe
Third International OCD Conference Organizer - Solvay/Upjohn - 1998, Madeira
Fourth International OCD Conference Organizer - Solvay/Upjohn - 2000, St. Thomas
Fifth International OCD Conference Organizer - Solvay/Upjohn - 2001, Sardinia
First, Second, Third Columbia University OCD Conference Organizer - Ciba Geigy/CME
First Mt. Sinai/OC Foundation OCD Conference - 1994 - Solvay/Upjohn
First, Second, Third Mt. Sinai/Seaver Center Autism Conference
First Mt. Sinai/Seaver Center Autism Conference for Educators

Administrative:

Director, Anxiety Diagnostic and Recruitment Unit
MHCRRC, New York State Psychiatric Institute

Director, Compulsive and Impulsive Disorders Program
New York State Psychiatric Institute

Director, Open Treatment Component
Mental Health Clinical Research Center
New York State Psychiatric Institute

Member, Quality Assurance Committee
New York State Psychiatric Institute
Queens Hospital Center

Member, Incident Review Committee
New York State Psychiatric Institute

Member, Medical Staff Committee
New York State Psychiatric Institute
Queens Hospital Center

Member, Continuing Medical Education Committee
Columbia University, College of Physicians and Surgeons

Member, Medical Education Committee, Medical Ethics
Group for the Advancement of Psychiatry

Member, Scientific Program Committee
Society for Biological Psychiatry

Consultant, Health and Hospitals Corporation
Psychopharmacology Issues

Member, Managed Care Committee - Psychiatry
Mount Sinai School of Medicine

Member, Operating Committee
Mount Sinai School of Medicine

Member, Continuing Medical Education Committee, Postgraduate School
Mount Sinai School of Medicine

Member, Promotions Committee
Mount Sinai School of Medicine

Chair, Outpatient Psychiatry Research Committee
Mount Sinai School of Medicine

Chair, Psychiatry Research Incident Review Board
Mount Sinai School of Medicine

Chair, Space Appropriations Committee, Psychiatry Outpatient Research Center, Atran E
Mount Sinai School of Medicine

Member, Special Investigation Committee-Scientific Integrity
Mount Sinai School of Medicine

Member-Internal Committee-Neurology Departmental Review
Mount Sinai School of Medicine

Co-Chair-Planning Committee-Institute for Brain Disorders

Patient Advocacy Groups

Obsessive-Compulsive Foundation
Member, Scientific Advisory Board
Director, Scientific Awards Committee
Member, Minorities and Research Committee

International Obsessive-Compulsive Council
Founding Member
Secretary

Anxiety Disorders Association of America
Member, Scientific Advisory Board

World Psychiatric Association, Section on Anxiety and OCD
Secretary

Cure Autism Now,
Chair, Scientific Advisory Group – Treatment Guidelines
Chair, Autism Clinical Trials Task Force (ACTTF)
Chair – Clinical Trials Network (CTN)

Committees

Incident Review Committee - NYS Psychiatric Institute

Faculty Staff Committee - NYS Psychiatric Institute

Quality Assurance Committee - NYS Psychiatric Institute, Queens Hospital Center

Chairman - Grand Rounds Committee - Queens Hospital Center

Chairman - Journal Club Committee - Queens Hospital Center

Operating Committee - MSSM Psychiatry Department
Senior Investigators Committee - MSSM Psychiatry Department
Clinical Directors Committee - MSSM Psychiatry Department
Affiliate Clinical Directors Committee - MSSM Psychiatry Department
Trauma Committee - Victim Services, Inc.
Trauma Planning Subcommittee - Victim Services, Inc.
Service Directors Committee - Queens Hospital Center
Managed Care Committee - Mt. Sinai School of Medicine
Continuing Medical Education Committee - Mt. Sinai School of Medicine
Promotions Committee - Mt. Sinai School of Medicine

Grant Reviewer

NIMH – 1996-2005 - RO1, K grants, RUPP-PI

NIDA – 1995-2003 - RO1, K grants

Current Funded Grants:

Principal Investigator

(2003-2008). NIH – Greater New York Autism Research Center of Excellence: The STAART Program. (1 U54 MH66673-01). Annual Direct Cost \$ 1,417,295
Total Direct Cost \$ 7,149,157.

(2003-2008). NIH – Greater New York Autism Research Center of Excellence: The STAART Program. (1 U54 MH66673-01). Liquid Citalopram Supplement.
Annual Direct Cost \$ 100,000.

(2003-2008). NIMH - NRSA Institutional Research Training Grants – Training in Psychopharmacology and Outcomes Research (1 T32 MH62996-01). Annual
Annual Direct Cost \$ 50,127 Total Costs \$ 455,353.

(2005-2008). FDA – Fluoxetine in Pediatric Body Dysmorphic Disorder
(FD-R-002613-01) Annual Direct Cost \$ 289,387 Total Direct Cost \$ 884,873.

(1994-2007). Seaver Foundation - Seaver Autism Research Center
(Eric Hollander, M.D., Director) Annual Cost \$ 1,250,000 Total Cost \$ 13,000,000.

(2007-2009) UJAFJP – Seaver Center Social Skills Project
Annual Direct Cost \$ 74,166

(2006-2007). CAN – Clinical Trials Network Infrastructure.
Annual Direct Cost \$ 102,488 Total Direct Cost \$ 112,737.

(2006-2007). CAN – A multi-site double-blind placebo-controlled trial of memantine vs. placebo in children with autism targeting motor skills.
Annual Direct Cost \$ 54,393 Total Direct Cost \$ 59,842.

(2006-2008). BMS – Aripiprazole Treatment in Children with Autistic Disorder
Annual Direct Cost \$ 19,835

Co-Principal Investigator

(2000-2004). CDC – Pharmacotherapy of Sexually Compulsive MSM –
Jonathan Morgenstern, PI, Annual Direct Cost \$ 244,172 Total Direct Cost \$ 712,324.

(1998-2003). Solvay Pharmaceuticals - Brain Imaging of the Effects of Lithobid and Lithium Carbonate In Bipolar and Cyclothymic Patients - Monte Buchsbaum, PI, Total Direct Cost \$ 252,000.

Co-Investigator

(2000-2006). NIDA – Interdisciplinary Training In Drug Abuse Research (T32 DA 07135-21) – Stuart C. Sealfon, M.D., P.I., Annual Direct Cost \$ 359,568 Total Direct Cost \$ 1,797,840.

Pending Grants:

Principal Investigator

NIH – Mount Sinai Interdisciplinary Developmental Science Award

NIMH – Lithium vs. Naltrexone vs. Placebo in Impulse Dyscontrol (Pathological Gambling)
Annual Direct Cost \$ 225,000 Total Direct Cost \$ 381,375

NIMH – Efficacy and Safety of Risperidone Augmentation in SRI-Resistant OCD
Annual Direct Cost \$ 225,000 Total Direct Cost \$ 381,375

Prior Funded Grants

(2001-2006). FDA – Fluoxetine vs. Placebo In Adult Autistic Disorder.
(FD-R-002026-01) Annual Direct Cost \$ 203,771 Total Direct Cost \$ 607,930.

(2001-2006). NINDS – Divalproex Sodium/Placebo In Child/Adolescent Autism.
(1 R21 NS43979-01) Annual Direct Cost \$ 100,000 Total Direct Cost \$ 300,000.

(1998-2003). FDA - Liquid Fluoxetine vs. Placebo in Child/Adolescent Autism.
(FD-R-001404-01) Annual Direct Cost \$ 116,242 Total Direct Cost \$ 349,637
Total Cost \$ 592,635.

(1999-2003). NIMH - Pharmacotherapy of Adolescent Body Dysmorphic Disorder
(1 RO1 MH58935-01A1) Annual Direct Cost \$ 66,578 Total Direct Cost \$ 112,850
Total Cost \$ 475,247.

(2002-2003). Abbott Laboratories – An Open-Label Trial of Divalproex Sodium Extended Release In Borderline Personality Disorder. Total Direct Cost \$ 143,115.00.

(2001-2003). Pfizer Pharmaceuticals – Efficacy of Sertraline in the Treatment of Binge Eating Disorder Among Obese Children and Adolescents. Total Direct Cost \$ 50,000.

(2001-2003). Forrest Laboratories – Treatment of Internet Addiction with Citalopram.
Total Direct Cost \$ 50,000.

(2001-2003). Contral Pharma – Nalmefene in the Treatment of Pathological Gambling: A Placebo Controlled Dose Reponse Study. Total Direct Cost \$ 100,000.

(2001-2003). Pfizer – Multicenter Trial of Ziprasidone Augmentation in Serotonin Reuptake Inhibitor-Resistant Obsessive-Compulsive Disorder. Total Direct Cost \$ 144,663.

(2001-2003). Callisto – Autoimmune Investigations In Obsessive-Compulsive Disorders.
Total Direct Cost \$ 10,000.

(2001-2003). Pfizer – Phase II, Twelve Week, Double Blind and Placebo Controlled Study

To Evaluate the Safety and Efficacy of Two Doses of CP-448,187 (1.5mg and 3.0mg) In Subjects with Obsessive Compulsive Disorder. Total Direct Cost \$ 100,000.

(1998-2003). Abbott Laboratories – Divalproex Sodium vs. Placebo In Childhood/Adolescent Autism: A Double-Blind Placebo Controlled Study Followed by Fluoxetine Augmentation. Total Cost \$ 86,000.

(1998-2003). Lilly Laboratories – Olanzapine vs. Placebo Crossover Study of Autistic Disorder: Effect of fMRI Imaging. Total Cost \$ 150,000.

(1998-2003). Bristol-Myers Squibb - Serzone Treatment Study in Pathological Gambling. Total Direct Cost \$ 40,000.

(1998-2003). Solvay Pharmaceuticals - Double-Blind Parallel Trial of Lithobid, Lithium Carbonate and Placebo In Lithium Treatment Naive Bipolar and Cyclothymic Patients Presenting To A Pathological Gambling Clinic. Total Annual Direct Cost \$ 127,306 Total Cost \$ 254,612.

(1998-2003). PBO Foundation - Research and Clinical Program for OCD and Related Disorders. Total Annual Direct Cost \$ 90,910.

(1997-2003). Janssen Pharmaceuticals - Risperidone in Refractory OCD: Positron Emission Tomography Imaging. Annual Direct Cost \$ 120,000.

(1995-2003). Lilly Research Labs - Prozac and Regional Metabolic Activity in Autism. Total Direct Cost \$ 30,000.

(1998-2003). Smith-Kline Beecham – A Double-Blind Placebo-Controlled Flexible Dose Study of the Efficacy and Tolerability of Paroxetine on Generalized Anxiety Disorder. Total Direct Cost \$ 60,120.

(1999-2003). Solvay Pharmaceuticals – A Multicenter, Double-Blind, Randomized, Parallel Group Study of the Efficacy and Safety of a Flexible Dose Regimen of Fluvoxamine CR versus Placebo in Outpatients with Obsessive Compulsive Disorder. Total Direct Cost \$ 100,000.

(1999-2003). Abbott Pharmaceuticals – Divalproex Sodium vs Placebo in Intermittent Explosive Disorder. Total Direct Cost \$ 100,000.

(1999-2003). Solvay Pharmaceuticals – Fluvoxamine vs. Placebo In the Treatment of Generalized Social Phobia. Total Direct Cost \$ 100,000.

(1998-2002). NIMH - Divalproex Sodium/Placebo In Borderline PD (1 RO3 MH56974-01). Annual Direct Cost \$ 49,988 Total Direct Cost \$ 99,762 Total Cost \$ 169,097.

(1997-2002). NIDA - Serotonergic/Norepinephrine Function in Pathological Gambling. (1 RO1 DA10234-01A2) Annual Direct Cost \$ 251,126 Total Direct Cost \$ 984,926 Total Cost \$ 1,669,450.

(1997-2001). Glaxo-Wellcome - Sumatriptan Challenge In Autism and Asperger's Disorder. Total Direct Cost \$ 50,000.

(1998-2000). Cure Autism Now - Fluoxetine/Placebo Treatment of Childhood/Adolescent Autism: Clinical Predictors & Dimensional Severity. Total Cost \$ 56,100.

(1998-1999). Cure Autism Now - D8/17 Positivity in Autism: Implications for Etiology, Subtyping and Treatment. Total Cost \$ 15,000.

(1998-1999). NARSAD Distinguished Investigator Award - D8/17 Positivity in Autism: Implications for Etiology, Subtyping and Treatment. Total Cost \$ 85,525.

(1988-1993). NIMH Research Scientist Development Award - "Psychobiology of Obsessive Compulsive and Related Disorders", NIMH. MH-00750. Annual Costs \$ 72,150, Total Costs \$ 360,750.

(1994-1997). FDA Orphan Drug Grant - Clomipramine/Desipramine Crossover in BDD (FD-R-000941-01) Annual Direct Costs - \$ 198,871 Total Direct Cost \$ 398,600

(1995-1998). Abbott Pharmaceuticals - Valproate Treatment of Borderline Personality Disorder. Total Direct Cost \$ 25,000.

(1997-1998). SmithKline Beecham Pharmaceuticals - A Double-Blind, Placebo-Controlled, Flexible Dosing Trial to Evaluate the Efficacy of Modified Release Paroxetine In the Treatment of Panic Disorder. Annual Direct Cost \$ 25,000.

(1997-1998). Upjohn Pharmaceuticals - Double Blind Placebo Controlled Fluvoxamine Treatment of Pathological Gambling. Annual Direct Cost \$ 100,000.

(1994-1996) Upjohn Pharmaceuticals - Double Blind Placebo Controlled Fluvoxamine Treatment of Pathological Gambling. Annual Direct Cost \$ 100,000.

(1993-1994). Solvay Pharmaceuticals - Fluvoxamine/Clomipramine Treatment of OCD. Annual Direct Cost \$ 52,500.

(1992-1993). Smith Kline Pharmaceuticals - Effect of Paroxetine on SPECT/Cerebral Blood Flow in OCD. Annual Direct Cost \$ 15,000.

(1989-1994). Mental Health Clinical Research Center (NIMH) - Open Treatment Component (DF Klein, PI) \$ 200,420.

(1990-1992). American Psychiatric Association/McArthur Foundation - DSM-IV Field Trial for Obsessive-Compulsive Disorder. Annual Direct Cost \$ 10,000.

(1991-1993). Smith Kline Beecham Pharmaceuticals - Paroxetine Treatment of Obsessive-Compulsive Disorder. Annual Direct Cost \$ 100,000.

(1990-1991). Child Psychiatry Research Center Grant - Psychobiology of Childhood Obsessive-Compulsive Disorder. \$ 2,220.

(1990-1991). Child Psychiatry Research Center Grant - Follow-up Study: Collaborative Perinatal Project Soft Signs and Anxiety Disorders. \$ 2,000.

(1990-1991). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. Psychobiology of Impulsive Personality Disorders. \$ 3,000.

(1988-1989). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. 5HT Enhanced Cerebral Blood Flow and Auditory Evoked Potentials and Repeat Challenges During Treatment in OCD. \$ 6,200.

(1988-1989). Biomedical Research Support Grant - Columbia University College of Physicians and Surgeons. Apomorphine Challenges in Cocaine Abuse. \$ 5,000.

(1987-1988). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. Biological Challenges in Normal Controls. \$ 4,500.

(1987). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. Biological Challenges in Obsessive-Compulsive Disorder. \$ 3,642.

(1987). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. Neuropsychiatric Investigations of Obsessive-Compulsive Disorder. \$ 4,964.

B. Co-Principal Investigator

NIMH - MH43845-Psychobiology of Obsessive Compulsive Disorder. 35% Effort. (Dr. M. Liebowitz, PI), Total Direct Costs \$ 356,412.

NIMH - MH44175-A Family Study of Obsessive Compulsive Disorder. 10% Effort. (Dr. Abby Fyer, PI). Total Direct Costs \$ 464,798.

(1991). Biomedical Research Support Grant - Research Foundation for Mental Hygiene - Neuropharmacology and Neuropsychology of Pathological Gambling. (C. DeCaria, PI). \$ 4,490.

(1991). Biomedical Research Support Grant - Research Foundation for Mental Hygiene - CT Findings and Soft-Signs in OCD (D. Stein, PI). \$ 2,000.

C. Director

Mental Health Clinical Research Center (NIMH). Anxiety Diagnostic and Recruitment Center Component (DF Klein, PI). \$ 508,000.

D. Co-Investigator

NIMH-Endogenous ERP's in Obsessive Compulsive Disorder. RO1 Grant. (J. Towey, PI) Total Direct Costs \$ 133,461.

NIMH-Chlorimipramine and Behavior Therapy for Obsessive Compulsive Disorder. RO1 Grant. (M. Liebowitz, PI) Total Direct Costs \$ 766,224.

(1988-1989). Biomedical Research Support Grant - Research Foundation for Mental Hygiene to New York State Psychiatric Institute. M-CPP Challenge in Eating Disorders (C. Buttinger, PI) \$ 5,000.

E. Overall Preceptor

NAAR/Bristol-Myers Squibb Research Fellowship in Autism and Neuropharmacology Neuropharmacology, Neuroimaging, Immunology, Molecular Biology, and Molecular Genetics Charles Cartwright, M.D. Total Annual Direct Cost \$ 60,000

NAAR/Bristol-Myers Squibb Research Fellowship in Autism and Neuropharmacology Neuropharmacology, Neuroimaging, Molecular Neurobiology Sherie Novotny, M.D. Total Annual Direct Cost \$ 60,000

Prior Co-Investigator

(1996-2000). NIMH First Award - Fluoxetine vs. Placebo Treatment of Depersonalization Disorder (MH55582) - Daphne Simeon, PI, Annual Direct Cost \$ 70,000.

(1996-1998). Theodore & Vada Stanley Foundation - Positron Emission Tomography and Emotion Interpretation in Autistic Adults - Bonnie Aronowitz, PI, Annual Direct Cost \$ 64,000.

Selected Presentations:

Over 300 scientific presentations at American Psychiatric Association, Society of Biological Psychiatry, American College of Neuropsychopharmacology, World Federation of Societies of Biological Psychiatry, Psychiatry Research Society, International Catecholamine Conf, Neuropharmacology of Serotonin Conf, AEP, CINP, ECNP and at many grant rounds at psychiatry departments in the USA and Europe/South America/Africa.

Chairman-Scientific Symposium

- 1988 Society of Biological Psychiatry - "Obsessive Compulsive Disorders"
- 1989 American Psychiatric Association - "Predictors of Treatment Outcome in OCD"
- 1989 American Psychiatric Association - "Overlap of Tourette's Syndrome & OCD"
- 1989 World Federation Societies Biological Psychiatry
"Update on Drug Treatment of OCD" and "Psychobiology of OCD"
- 1990 American Psychiatric Association - "Update on the Treatment of OCD"
- 1990 American Psychiatric Association - "Overlap of Eating Disorders and OCD"
- 1991 Columbia University CME - "New Directions in OCD"
- 1992 American Psychiatric Association - "Obsessive-Compulsive Related Disorders"
- 1992 American Psychiatric Association - "Impulsivity and Compulsivity"
- 1993 First International OCD Conference, Capri
- 1993 American Psychiatric Association - "OCD Spectrum Disorders"
- 1994 American Psychiatric Association - "OCD Spectrum" and "Neuropsychology of OCD"
- 1994 CINP, Washington, DC - "New Developments: Functional Imaging of OCD and TS"
- 1995 American Psychiatric Association -
"Overview and Psychopharmacology of Body Dysmorphic Disorder"
"Impulsivity and Compulsivity: Phenomenology and Treatment"
- 1996 American College of Neuropsychopharmacology -
"Oxytocin in Neuropsychiatric Illness: Studies Relevant to Autism";
"Strategies for Defining a More Homogeneous Phenotype of Autism for Family/
Genetic Studies"
- 1996 American Psychiatric Association - "OCD: State of the Art and Practical Management"
- 1997 American Psychiatric Association -
"Gambling: Biological/Genetic, Treatment, Government and Gaming Concerns"
"Predictors of Treatment Response in Mood and OCD-Related Disorders"
"Recent Advances in Autism and Asperger's Disorder"
"CNS Spectrums - Emerging Neuropsychiatric Concepts"
- 1998 American Psychiatric Association -
"Genetics of OCD"
- 1998 American College of Neuropsychopharmacology
"Neuropsychopharmacology of Pathological Gambling"
- 1999 American Psychiatric Association -
"New Perspectives in the Treatment of Impulsivity"
- 2000-2005
Multiple symposia at APA, ACNP, NCDEU annual meetings

Fellows:

1. Dan J. Stein, M.D.
Columbia University/NYS Psychiatric Institute Postdoctoral Research Fellow
NARSAD Young Investigator Award - "Psychobiology of the Personality Dimensions"
2. Daphne Simeon, M.D.
Columbia University/NYS Psychiatric Institute Postdoctoral Research Fellow
NIMH Postdoctoral Research Fellowship
NARSAD Young Investigator Award - "Depersonalization: Diagnosis, Biology, Treatment"
3. Michael Hwang, M.D.
Program for Minority Research Training in Psychiatry, American Psychiatric Association
"Neurological Aspects of OCD and TS"
4. Allison McCarley
Program for Minority Research Training in Psychiatry, American Psychiatric Association
"Sexual Side Effects of Serotonin Reuptake Blockers:
Stanley Scholar Program, Columbia University
5. Robert Grossman, M.D.
NIMH Postdoctoral Research Fellow - Mt. Sinai School of Medicine
Psychobiology of Self-Injurious Behavior
6. Scott Cherkasky, M.D.
Mt. Sinai Geriatric Research Fellow
OCD in the Geriatric Population
7. Cheryl Wong, M.D.
ACNP/Glaxo Wellcome Fellow
APA/PMRTP Research Fellow
8. Charles Cartwright, M.D.
NAAR/BMS Neuropsychopharmacology of Autism Fellow
9. Sherie Novotny, M.D.
NARSAD Young Investigator Award - "Pharmacological Treatment of Autism: Treating the Dimensions"
Mt. Sinai and Seaver Center Research Fellow
10. Alicia Kaplan, M.D.
Mt. Sinai and Seaver Center Research Fellow
11. Sallie Jo Hadley, M.D.
Mt. Sinai and Seaver Center Research Fellow
12. Stacy Wasserman, M.D.
Mt. Sinai and Seaver Center Research Fellow
13. Alicia Kaplan, M.D.
Mt. Sinai School of Medicine
14. Evdokia Anagnostou, M.D.
Mt. Sinai and Seaver Center Research Fellow
15. Lat ha Soorya, Ph.D.

Mt. Sinai School of Medicine, NIH Fellow
Training In Psychopharmacology and Outcomes Research

16. Ljilja Radulovic, M.D.
Mt. Sinai School of Medicine

17. Heather Berlin, Ph.D.
Mt. Sinai School of Medicine, NIH Fellow
Training In Psychopharmacology and Outcomes Research

18. Jennifer Bartz, Ph.D.
Mt. Sinai and Seaver Center Research Fellow

19. Danielle Halperin, PhD
NIDA T32 fellow

20. Ting Wang, PhD
NIDA T32 fellow

21. Ilana Slaff, MD
Seaver/YAI Fellow

Dissertation Committee:

1. Concetta DeCaria - Doctor of Philosophy in Psychology (Neuropsychology)
Dissertation: "Psychobiology of Pathological Gambling"

Current Research Activities:

Neuropharmacology/
Neuropsychiatry/
Functional Imaging/
Pharmacological and Psychological Treatment/
of
Autism
Obsessive-Compulsive Disorder
Body Dysmorphic Disorder
Pathological Gambling
Impulsive/Aggressive Personality Disorders
Impulse Control Disorders
OC Related Disorders

Publications

1. Nurnberger JI, Simmons-Alling S, Kessler L, Jimerson S, Shreiber J, Hollander E, Tamminga C, Nadi N, Goldstein DS, Gershon ES. Separate mechanisms for behavioral, cardiovascular, and hormonal responses to dextroamphetamine in man. Psychopharmacology, 84:200-204, 1984.
2. Hollander E, Mohs RC, Davis KL. Cholinergic approaches to the treatment of Alzheimer's disease. British Medical Bulletin 42:97-100, 1986.
3. Hollander E, Mohs RC, Davis KL. Antemortem markers of Alzheimer's disease. Neurobiology of Aging 7:367-387, 1986.
4. Davidson M, Kendler KS, Mohs RC, Hollander E, Ryan T, Davis KL. Effect of apomorphine infusion on plasma homovanillic acid in normal subjects. J Psychiatric Research 20(2):131-135, 1986.
5. Mohs RC, Hollander E, Haroutunian V, Davidson M, Davis B, Giordani B, Horvath TB, Davis KL. Cholinomimetics in Alzheimer's disease. In: Proceedings of World Congress of Biological Psychiatry 1986.
6. Davidson M, Mohs RC, Hollander E, Davis BM, Ryan T, Horvath TB, Davis KL. Physostigmine in patients with Alzheimer's disease. Psychopharmacology Bulletin 22:101-105, 1986.
7. Johns CA, Mohs RC, Hollander E, Davis BM, Greenwald BS, Horvath TB, Davis KL. Clinical studies of the cholinergic deficit in Alzheimer's disease. In: International Conference: The Dynamics of Cholinergic Function, Monograph edited by I. Hanin. Plenum Press, New York, 1986.
8. Davis KL, Hollander E, Davidson M, Davis BM, Mohs RC, Horvath TB. Induction of depression with oxotremorine in patient with Alzheimer's disease. American Journal of Psychiatry 144:468-471, 1987.
9. Hollander E, Davidson M, Mohs RC, Horvath TB, Davis BM, Zemishlany Z, Davis KL. RS 86 in the treatment of Alzheimer's disease: cognitive and biologic effects. Biological Psychiatry 22(9):1067-1078, 1987.
10. Hollander E, Kapell LA, Mohs RC, Davidson M, Davis BM, Horvath TB, Davis KL. Oral Physostigmine in the treatment of Alzheimer's disease. Geriatric Medicine Today 6(4): 68-76, 1987.
11. Davidson M, Mohs RC, Hollander E, Zemishlany Z, Powchik P, Ryan T, Davis KL. Lecithin and piracetam in Alzheimer's disease. Biological Psychiatry 22(1):112-114, 1987. (letter)
12. Liebowitz MR, Fyer AJ, Gorman JM, Campeas R, Levin A, Sandberg D, Hollander E, Papp L. Pharmacotherapy of social phobia: a condition distinct from panic attacks. Psychosomatics 28(6):305-308, 1987.
13. Hollander E. Non-tartrazine allergy with desipramine. Am J Psychiatry 144(9):1247, 1987. (letter)
14. Liebowitz MR, Campeas R, Hollander E. MAOI's: impact on social behavior. Psychiatry Research 22(1):89-90, 1987. (letter)
15. Hollander E, Liebowitz MR, Gorman JM. Anxiety disorders. In: American Psychiatric Press Textbook of Psychiatry, Talbott JA, Hales RE, Yudofsky SG, eds. American Psychiatric Press, Washington, D.C., 1988, pp. 443-493.

16. Hollander E, Fay M, Cohen B, Campeas R, Gorman JM, Liebowitz MR. Serotonergic and noradrenergic sensitivity in obsessive-compulsive disorder: behavioral findings. Am J Psychiatry 145(8):1015-1017, 1988.
17. Davidson M, Mohs RC, Kendler KS, Davis B, Johns CA, Hollander E, Horvath TB, Davis KL. Plasma homovanillic acid concentration in schizophrenic patients. Biomedicine and Pharmacotherapy (in press).
18. Liebowitz MR, Gorman JM, Fyer AJ, Campeas R, Levin AP, Sandberg D, Hollander E, Papp L, Goetz D. Pharmacotherapy of social phobia: an interim report of a placebo controlled comparison of phenelzine and atenolol. J Clin Psychiatry 49(7):252-257, 1988.
19. Hollander E, Fay M, Klein DF, Liebowitz MR. Catecholaminergic and monoaminergic effects in obsessive-compulsive disorder. In: Progress in Catecholamine Research, Part C: Clinical Aspects, edited by Belmaker KH, Sandler M, Dahlstrom A. New York: Alan R. Liss, Inc., 1988, pp. 377-383.
20. Hollander E, Fay M, Liebowitz MR. Clonidine and clomipramine in obsessive compulsive disorder. Am J Psychiatry 145(3):388-389, 1988. (letter)
21. Hollander E, Liebowitz MR. Augmentation of antiobsessional treatment with fenfluramine. Am J Psychiatry 145(10):1314-1315, 1988. (letter)
22. Hollander E, Papp L, Campeas R, DeCaria C, Liebowitz MR. More on self mutilation and obsessive compulsive disorder. Can J Psychiatry 33(7):675, 1988. (letter)
23. Davidson M, Hollander E, Cohen L, Mohs R, Davis KL: Cholinergic agonists in Alzheimer disease patients. In: Current Research In Alzheimer Therapy, edited by E. Jacobini and R. Becker. Taylor and Francis, Inc., New York, 1988, pp. 333-337.
24. Liebowitz MR, Fyer AJ, Gorman JM, Campeas RB, Sandberg DP, Hollander E, Papp LA, Klein DF. Tricyclic therapy of the DSM-III anxiety disorders: a review with implications for further research. J Psychiatry Res 22 (suppl 1):7-31, 1988.
25. Fyer AJ, Liebowitz MR, Gorman JM, Campeas R, Levin A, Sandberg D, Fyer M, Hollander E, Papp LA, Goetz D, Klein DF. Effects of clonidine on alprazolam discontinuation in panic patients: a pilot study. J Clin Psychopharmacol, 8(4):270-274, 1988.
26. Hollander E, Liebowitz MR, Gorman JM, Cohen B, Fyer AJ, Klein DF. Cortisol and sodium lactate - induced panic. Arch Gen Psychiatry 46(2):135-140, 1989.
27. Hollander E, Klein DF. Differential diagnosis of anxiety disorders. In Panic Anxiety States, edited by P. Kielholz, C. Adams. Deutscher Arzte-Verlag, Koln, 1989.
28. Hollander E, DeCaria C, Liebowitz MR. Biological aspects of obsessive compulsive disorder. Psychiatric Annals 19(2):80-87, 1989.
29. Hollander E, Liebowitz MR, Cohen B, Gorman JM, Fyer AJ, Papp LA, Klein DF. Prolactin and sodium lactate - induced panic. Psychiatry Res 28(2):181-191, 1989.
30. Hollander E, Liebowitz MR, Winchel RW, Klumker A, Klein DF. Treatment of body dysmorphic disorder with serotonin reuptake blockers. Am J Psychiatry 146(6):768-770, 1989.
31. Papp LA, Martinez JM, Klein DF, Ross D, Liebowitz MR, Fyer AJ, Hollander E, Gorman JM. Arterial blood gas changes in panic disorder and lactate-induced panic. Psychiatry Research

- 28(2):171-180, 1989.
32. Goetz RR, Gorman JM, Dillon DJ, Papp LA, Hollander E, Fyer AJ, Liebowitz MR, Klein DF. Do panic patients indiscriminately endorse somatic complaints? Psychiatry Res 29(2): 207-213, 1989.
 33. Hollander E, DeCaria C, Liebowitz MR. Biological aspects of obsessive compulsive disorder. Psychiatry Digest 9:6-8, 1989.
 34. Liebowitz MR, Hollander E, Schneier F, Campeas R, Hatterer J, Papp L, Fairbanks J, Sandberg D, Davies S, Stein M. Fluoxetine treatment of obsessive compulsive disorder: an open clinical trial. J Clinical Psychopharmacology 9(6):423-427, 1989.
 35. Hollander E, Klein DF. Medication. In: Handbook of Phobia Therapy: Rapid Symptom Relief In Anxiety Disorders, Lindemann C (ed.) Northvale, N.J.: Jason Aronson, Inc., 1989, pp. 405-425.
 36. Hollander E, Fairbanks J, DeCaria C, Liebowitz MR. Derealization without depersonalization. Am J Psychiatry 146:1360-1361, 1989. (letter)
 37. Hollander E, Fairbanks J, DeCaria C, Liebowitz MR. Pharmacological dissection of panic and depersonalization. Am J Psychiatry 146(3):402, 1989. (letter)
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469. Dell'Osso B, Allen A, Hollander E. Comorbidity issues in the pharmacological treatment of pathological gambling: a critical review. Clin Pract Epidemiol Ment Health Oct 10;1:21, 2005.
470. Sussman, N. (interviewer) Profiles in Psychiatry. In session with Eric Hollander, M.D. Primary Psychiatry 12(3): 24-27.
471. Allen A, Hollander E. Diagnosis and treatment of obsessive-compulsive disorder. Primary Psychiatry 12(12):34-42, 2005.
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473. Hollander E, Baker BR, Kahn J, Stein DJ. Conceptualizing and assessing impulse-control disorders. In Hollander E, Stein DJ (editors): Clinical Manual of Impulse Control Disorders. American Psychiatric Publishing, Inc., Washington, DC, 2006, pp. 1-18.
474. Allen A, Hollander E. Sexual compulsions. In Hollander E, Stein DJ (editors): Clinical Manual of Impulse Control Disorders. American Psychiatric Publishing, Inc., Washington, DC, 2006, pp. 87-114.

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482. Simeon D, Hollander E. Anxiety disorders. In Simon RI, Hales RE, Textbook of Suicide Assessment and Management. Washington, D.C.: American Psychiatric Publishing, 2006, p. 313-32.
483. Dell'Osso B, Nestadt G, Allen A, Hollander E. Serotonin-norepinephrine reuptake inhibitors in the treatment of obsessive-compulsive disorder: a critical review. J Clin Psychiatry 67:600-610, 2006.
484. Dell'Osso B, Altamura AC, Allen A, Marazziti D, Hollander E. Epidemiological and clinical updates on impulse control disorders: a critical review. European Arch Psychiatry (in press).
485. Hollander E, Dell'Osso B. Topiramate plus paroxetine in treatment-resistant obsessive-compulsive disorder. Int Clin Psychopharmacol 21(3):189-191, 2006.
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487. Hollander E, Bartz J, Chaplin W, Phillips AT, Sumner J, Soorya L, Anagnostou E, Wasserman S. Oxytocin increases retention of social cognition in autism. Biol Psychiatry (in press).
488. Anagnostou E, Hollander E. 4 drugs can improve autism's repetitive behaviors: controlled trials shape evolving treatment approach. Current Psychiatry 5(4):55-64, 2006.
489. Hollander E et al. Serotonin-norepinephrine reuptake inhibitors in the treatment of obsessive-compulsive disorder: a critical review. J Clin Psychiatry 67(4):600-610, 2006.
490. Hollander E, Alterman R, Dell'Osso B. Approaching treatment-resistant obsessive-compulsive

disorder with brain stimulation interventions: the state of the art. Psychiatric Annals 36(7): 480-488, 2006.

491. Hollander E, Allen A. Beauty is in the eye of the beholder: new insights in imagined ugliness. Primary Psychiatry 13(7):37-38, July 2006.
492. Hadley SJ, Kim S, Priday L, Hollander E. Pharmacologic treatment of body Dysmorphic disorder. Primary Psychiatry 13(7):61-69, July 2006.
493. Hollander E, Swanson E, Anagnostou E, Phillips A, Chaplin W, Wasserman S. Liquid Fluoxetine versus placebo for repetitive behaviors in childhood autism. In Progress in Neurotherapeutics and Neuropsychopharmacology, Vol 1. Cambridge University Press, Cambridge, UK, 2006.
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495. Josephson SC, Hollander E, Sumner J. Comprehensive treatment of three patients with co-morbid OCPD and ADHD. CNS Spectr 12(5):338-342, 2007.
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497. Autism Genome Project Consortium. Mapping autism risk loci using genetic linkage and Chromosomal rearrangements. Nat Genet 39(3):319-328, 2007.
498. Zohar J, Hollander E, Stein DJ, Westenberg HG; The Cape Town Consensus Group. Consensus statement. CNS Spectr 12(2 Suppl 3):59-63, 2007.
499. Hollander E, Kim S, Khanna S, Pallanti S. Obsessive-compulsive disorder and obsessive-compulsive spectrum disorders: diagnostic and dimensional issues. CNS Spectr 12(2 Suppl 3):5-13, 2007.
500. Muench F, Morgenstern J, O'Leary AO, Parsons JT, Hollander E, Wainberg ML, Lai B, Irwin T. The consequences of compulsive sexual behavior: the preliminary reliability and validity of the Compulsive sexual behavior consequences scale. J Sexual Addiction & Compulsivity (in press).
501. Silverman JM, Buxbaum JD, Ramoz N, Schmeidler J, Reichenberg A, Hollander E, Angelo G, Smith CJ, Kryzak LA. Autism related routines and rituals associated with a mitochondrial Aspartate/glutamate carrier SLC25A12 polymorphism. Am J Med Genetics (Neuropsychiatric Genetics). In press.
502. Dell'Osso B, Mundo E, Buoli M, Hollander E, Altamura AC. Disturbo ossessivo-compulsivo e disturbi correlate: aggiornamenti clinico-biologici e indicazioni future. Minerva Psichiatr 48:195-210, 2007.
503. Dell'Osso B, Marazziti D, Hollander E, Altamura AC. Traditional and newer impulse control disorders: a clinical update. Clinical Neuropsychiatry 4(1):30-38, 2007.

Books:

1. Hollander E (editor): Obsessive-Compulsive Related Disorders. American Psychiatric Press, Inc. Washington, DC, 1993.

2. Hollander E, Zohar J, Marazziti D, Olivier B (editors): Current Insights in Obsessive Compulsive Disorder. John Wiley and Sons, Ltd. Sussex, England, 1994.
3. Hollander E, Stein DJ (editors): Impulsivity and Aggression. John Wiley and Sons, Ltd., Sussex, England, 1995.
4. Oldham JO, Hollander E, Skodol A (editors): Impulsivity and Compulsivity. American Psychiatric Press, Inc., Washington, DC, 1995.
5. Sanchez-Plannell J, Hollander E (editors): Controversies in Dysmorphophobia and Body Dysmorphic Disorder. American Psychiatric Press, Inc., Washington, DC (in press).
6. Hollander E, Stein DJ (editors): Obsessive Compulsive Disorders. Marcel Dekker, Inc., New York, NY, 1997.
7. Stein DJ, Hollander E (editors): Trichotillomania: New Developments. American Psychiatric Press, Inc., Washington, DC, 1999.
8. Simeon D, Hollander E (editors): Self-Injurious Behaviors: Assessment and Treatment. American Psychiatric Press, Inc., Washington, DC, 2001.
9. Hollander E, Wong CM: Contemporary Diagnosis and Management of Depression, Anxiety, and Obsessive-Compulsive Disorders. Handbooks in Health Care Company, 2000.
10. Summers M, with Eric Hollander, M.D.: Everything In Its Place: My Trials and Triumphs With Obsessive Compulsive Disorder. Penguin Putnam, New York, 1999.
11. Stein DJ and Hollander E. Anxiety disorders comorbid with depression: social anxiety disorder, post-traumatic stress disorder, generalized anxiety disorder and obsessive-compulsive disorder. Martin Dunitz Ltd., London, England, 2002.
12. Hollander E, Simeon D. Concise Guide to Anxiety Disorders. American Psychiatric Publishing Inc., Washington, D.C., 2003.
13. Stein DJ, Hollander E (editors): Textbook of Anxiety Disorders. American Psychiatric Publishing, Inc., Washington, DC, 2002.
14. Stein DJ, Hollander E (editors): Tratado de los Trastornos de Ansiedad. Ars Medica, Barcelona, Spain, 2004.
15. Hollander E (editor): Autism Spectrum Disorders. Marcel Dekker, Inc., New York, 2003.
16. Hollander E, Evers M (editor): Contemporary Diagnosis and Management of Mood and Anxiety Disorders. Handbooks In Health Care Company, 2003.
17. Hollander E, Bakalar N. Coping with Social Anxiety: The Definitive Guide to Effective Treatment Options. Henry Holt and Company, New York, 2005.
18. Hollander E, Stein DJ (editors): Clinical Manual of Impulse Control Disorders. American Psychiatric Publishing, Inc., Washington, DC, 2006.
19. Hollander E, Anagnostou E (editors): Clinical Manual for the Treatment of Autism. American Psychiatric Publishing, Inc., Washington, DC, 2007.

20. Hollander E, Simeon D: Anxiety Disorders in Board Prep and Review Guide for Psychiatry. American Psychiatric Publishing, Inc., Washington, DC, 2006.

Exhibit C

CV of Dr. McGinity

CURRICULUM VITAE

James William McGinity
Professor of Pharmaceutics
College of Pharmacy
The University of Texas at Austin
Austin, Texas 78712-1074

I. Personal

Born in Brisbane, Australia. Citizen of the United States. Married; two children.

II. Education

B. Pharm. degree in December, 1967, from the University of Queensland, Brisbane, Australia. Graduated with the Ph.D. degree in Physical Pharmacy from the University of Iowa in May, 1972. Major Professor was John L. Lach, Ph.D. Short Courses - "Cosmetic Technology" at Columbia University.

III. Positions Held

June 12, 1972 to September 30, 1973 - Research Investigator for E.R. Squibb and Sons, New Brunswick, New Jersey.

October, 1973 to August, 1976 - Associate Professor of Pharmacy at the School of Pharmacy, Texas Southern University, Houston, Texas.

August, 1976 to August, 1979 - Assistant Professor of Pharmacy, College of Pharmacy, University of Texas at Austin, Austin, Texas.

September 1, 1979 to August 31, 1985 - Associate Professor of Pharmacy, College of Pharmacy, University of Texas at Austin, Austin, Texas.

September 1, 1979 to July 2000 - Assistant Director of the Drug Dynamics Institute, University of Texas at Austin, Austin, Texas.

July 2000 to present-Director of the Drug Dynamics Institute, University of Texas at Austin, Austin, Texas.

Appointed to the position of Area Coordinator for the Pharmaceutics Area effective September 1, 1982 and Division Head of Pharmaceutics, January, 1983-August 2007.

September 1, 1985 to present - Professor of Pharmacy, College of Pharmacy, University of Texas at Austin, Austin, Texas.

IV. Graduate and Undergraduate Courses Presented

Product Development, PHR 381D, (Graduate Class) – UT Austin
Advanced Manufacturing Pharmacy, PHR 381G (Graduate Class) – UT Austin
Advanced Pharmaceutical Processes, PHR 380Q (Graduate Class) – UT Austin
Recent Advances in Pharmaceutics, PHR 382R (Graduate Class) – UT Austin
Pharmaceutical Dosage Forms, PHR 356C
Pharmaceutics I, Lab and Calculations, PHR 133K - UT Austin
Basic Manufacturing Pharmacy, PHR 266K - UT Austin
Sterile Pharmaceutical Preparations, PHR 357 - UT Austin
Pharmaceutics I, PHR 356C and PHR 156P - UT Austin
PHR 363, PHR 225K and PHR 380M - UT Austin
Lectures were also presented in the following courses–
“Pharmacy Orientation” and “Clinical Toxicology” - TSU

V. Professional Memberships

Society of Cosmetic Chemists	1972-1973
American Pharmaceutical Association	1969-Present
American Association of Pharmaceutical Scientists (Divisions of Basic Pharmaceutics and Industrial Pharmaceutical Technology)	1985-Present
Rho Chi (Pharmacy Honorary Society)	1970-Present
Phi Lambda Upsilon (Chemistry Honorary Society)	1971-Present
Phi Delta Chi (Pharmacy Professional Fraternity)	1976-Present
Member of the Drug Dynamics Institute, College of Pharmacy, University of Texas	1974-Present
Director of the Drug Dynamics Institute College of Pharmacy, University of Texas	1995-Present

VI. Current Research Interests

1. Several new techniques to microencapsulate drugs using biodegradable polymers have been developed. These formulations are currently under investigation along with the various parameters influencing loading dose, drug release characteristics and physico-chemical properties.
2. Topical Drug Delivery Systems: Studies with these systems have been concerned with the physical and chemical factors that influence the in vitro diffusion of drug from each vehicle. Emulsion technology with particular emphasis on micro and multiple emulsion systems.

3. Applications of hot-melt extrusion in the design of pharmaceutical dosage forms.
4. Sustained-Release Tablets: Novel controlled-release products have been designed and tested for their release properties in vitro. Mechanisms of drug release are also being investigated.
5. Study of the chemical, physical and physico-mechanical properties of polymeric delivery systems including drug delivery by the oral, parenteral and topical routes of administration.
6. Film coating technology using aqueous and alcoholic systems. Physico-chemical properties of polymers and processing considerations.

VII. Honors and Awards

1. Received award (monetary) for the highest grade in Pharmaceutical Chemistry in final undergraduate year, University of Queensland, 1967.
2. Recipient of the Lederle Research Award at Texas Southern University for 1974 and 1975.
3. Listed in the 1975 awards volume of "Outstanding Educators of America."
4. Listed in the 1976 and 1978 volumes of "Who's Who in the South and Southwest."
5. Elected to the position of National Secretary for the Basic Pharmaceutics Section of the American Pharmaceutical Association, 1981-1983.
6. Listed in the 1978-79 volume of "Personalities of the South."
7. Listed in the 1979-80 volume of "Dictionary of International Biography."
8. Listed in the first edition of "Personalities of America 1978-80."
9. Johnson & Johnson Centennial Chair in Pharmacy, 1985-present
10. Fellow of AAPS, 1990.
11. North American Editor for *European Journal of Pharmaceutics and Biopharmaceutics*, 1995.
12. Co-Editor for *European Journal of Pharmaceutics and Biopharmaceutics*, 1996.
13. Chairman of the AAPS Fellows Selection Committee, 1999.

14. Nominated for the 1999 Glaxo Wellcome International Achievement Award that is presented by the Royal Pharmaceutical Society of Great Britain.
15. Recipient of the 1999 Pharmaceutical Preparation and Particle Design (PPD) Award presented by the Society of Powder Technology Japan.
16. Feng Zhang, graduate student under the directorship of Dr. McGinity, received the Outstanding Dissertation Award in the Division of Engineering and Materials Sciences from the University of Texas at Austin. (2000). This is the first time a graduate student in Pharmacy has received this award.
17. Recipient of the APSTJ 2004 Takeru & Aya Higuchi Memorial Lectureship that is presented by The Academy of Pharmaceutical Science and Technology Japan, in July 2004 in Kisarazu, Japan.
18. Recipient of the 2005 Research Achievement Award in Pharmaceutical Technologies that is presented by the American Association of Pharmaceutical Scientists.
19. Recipient of the 2006 *Drug Development and Industrial Pharmacy* Outstanding Paper Award for "Controlled Release of a Poorly Water-Soluble Drug from Hot-Melt Extrudates Containing Acrylic Polymers" Yucun Zhu; Navnit H. Shah; A. Waseem Malick; Martin H. Infeld; James W. McGinity.

VIII. Committees

1. Seminar Chairman and Coordinator for the Squibb Institute for Medical Research (Pharm. R & D) 1972-1973.
2. Curriculum Committee 1974 & 1975.
3. Library Committee 1975.
4. Liaison Officer for the American Journal of Pharmaceutical Education, News Section 1974-1976.
5. Admissions Committee 1976, 1977, 1981, 1982.
6. Safety Committee 1976-1977.
7. Subcommittee on Graduate Student Recruitment 1976-present.

8. Curriculum Committee 1977-1980.
9. Ad Hoc Committee on Combined Degree Programs 1977-1978.
10. Minority Recruitment Committee (College of Pharmacy Representative on this University committee 1976-1978).
11. Member of Steering and Monograph Committee (Academy of Pharmaceutical Sciences) "Codex of Pharmaceutical Excipients" 1977-1980.
12. Equipment Committee 1980-1989.
13. Academic Performance Committee 1981-1983.
14. Administrative and Coordinating Subcommittee 1982-1984.
15. Regulations and Scientific Policy Committee, Academy of Pharmaceutical Sciences 1982-1984.
16. National Secretary for the Basic Pharmaceutics Section of the American Pharmaceutical Association 1981-1983.
17. Program chairman for the 1983 Arden House Conference, a major conference sponsored by the I.P.T. section of the Academy of Pharmaceutical Sciences. Conference title: "Microparticulate Drug Delivery Systems."
18. UT College of Pharmacy Representative to "Pharmat" 1981-1982.
19. Member of IIPC - 1980-1985.
20. Equipment Committee 1980-present. Committee Chairman, 1988-present
21. Program Committee for the Basic Pharmaceutics Section of the APhA Academy of Pharmaceutical Sciences Midwest Regional meetings
22. Program Committee member of the Pharmaceutical Technology Section of the AAPS - annual meetings 1990 & 1991.
23. Member of AAPS Fellows Selection Committee, 1995-1998.
24. Member of Intellectual Property Committee, The University of Texas at Austin, 1994-2003.
25. Member of the U.S.P. committee on polymeric excipients. 1995-1997.
26. Chairman of the space committee, College of Pharmacy, The University of Texas at Austin, 1995-present.

27. Member of faculty development committee, College of Pharmacy, The University of Texas at Austin. 1995-present.
28. Chairman of Self Study Subcommittee on College Resources, 1996-97
29. Chairman of AAPS Fellows Selection Committee, 1999.
30. Member of the PDD Research Achievement Award Selection Committee, 1999.
31. Member of the HØst Madsen Award Selection Committee for the International Pharmaceutical Association. The award is made available by the Danish Pharmaceutical Association to an eminent pharmaceutical scientist, 1999.
32. Member of the search committee for the new Director of Intellectual Property. 2003
33. Member of AAPS PharmSciTech Outstanding Publication award, member of the committee 2003.
34. Member of the AAPS Books Program Review Team 2003.
35. Member, AAPS Pharmaceutical Technology Education Committee, 2004-2005.
36. Member of the Editorial Board for *The Journal of Pharmaceutical Sciences* (January 2005-December 2007).

IX. Consultantships

List available on request.

X. International Presentations

1. Third International Symposium on Microencapsulation, Tokyo, Japan. September, 1976.
2. First through Fifth International Conferences on Pharmaceutical Technology, (APGI) Paris, France. 1977, 1980, 1983, 1986 & 1989.
3. First International Conference on Powder Technology and Pharmacy, Basel, Switzerland. June, 1978.

4. Fourth International Symposium on Microencapsulation, Miami Beach, Florida, U.S.A. March, 1979.
5. First British Pharmaceutical Technology Conference, London, England. April, 1980.
6. Australian Pharmaceutical Science Conference and the Annual Meeting of the Australia and New Zealand Association for the Advancement of Science, Adelaide, Australia. May, 1980. Royal Australian Chemical Institute, Sydney, Australia. May, 1980.
7. International Symposium on Powder Technology, Kyoto, Japan. September, 1981.
8. Second British Pharmaceutical Technology Conference, London, England. April, 1982.
9. Twenty-second Annual International Industrial Pharmacy Conference, Texas, U.S.A. February, 1983.
10. Fourth British Pharmaceutical Technology Conference, Edinburgh, Scotland. April, 1984 (Member of International Review Board).
11. Rohm Pharma Co., Darmstadt, West Germany. 1984, 1986, 1987, 1988, 1989, 1990, & 1991.
12. Eudragit Symposium, Rohm Pharma Co., Darmstadt, West Germany. May, 1985.
13. Synthelabo Corp., Paris, France, June, 1985.
14. Kiel University, Kiel, West Germany, February, 1990.
15. Second World Congress on Particle Technology, Kyoto, Japan, September 1990.
16. International Conference on Aqueous Polymeric Coating Systems and Related Techniques, Gifu, Japan, September 1990.
17. SmithKline Beecham Laboratories, Worthing, England, Short Course - "Compaction Technology", April, 1991.
18. "Eudragit Symposium", Tokyo & Osaka, Japan, November, 1992.
19. "Polymeric Dispersions for Aqueous Film Coating: Physical-Chemical Properties and Processing Considerations", presented at the symposium "Advances in Delivery of Therapeutic and Diagnostic Agents", Sydney, Australia, December 1992.

20. The 12th Pharmaceutical Technology Conference, Elsinore, Denmark, March, 1993.
21. 9th Annual Microencapsulation Conference, Ankara, Turkey, September 1993.
22. 13th Pharmaceutical Technology Conference, Strasbourg, France, April 1994.
23. 14th Pharmaceutical Technology Conference, Barcelona, Spain, April 1995.
24. 1st World Meeting on Pharmaceutics, Budapest, Hungary, May 1995.
25. 10th International Symposium on Microencapsulation, Austin, Texas, September 1995, Chairman
26. APV Conference, Mainz, Germany, March '96.
27. Microencapsulation Mini-Symposium, St. Petersburg, Russia, September '96.
28. International Biotechnology Meeting, George R. Brown Convention Center, Houston, TX, June '97.
29. Particulate Powder Design Award Symposium, Hamamatsu, Japan, October '99.
30. APV/APGI 9th International Conference on Pharmaceutical Technology, Berlin, Germany, April 2000.
31. "Dry Powder Coating: A Novel Technique for Film Coating Solid Substrates", 29th Conference on Pharmaceutical Technology (sponsored by The Academy of Pharmaceutical Science and Technology, Japan), Kisarazu, Japan, July 2004
32. "Melt Extrusion and Controlled Release", 41st Annual Pharmaceutical Technologies Arden Conference-Oral Controlled Release Development and Technology, AAPS, West Point, NY, January 2006.
33. "Influence of Processing on the Properties of Pharmaceutical Dosage Forms Containing Acrylic Polymers: Hot-Melt Extrusion or Film Coating", Rohm Pharma, Darmstadt, Germany, March 2006.
34. "Curing of Eudragit RL and RS Coatings", "Thermal Processing of Pharmaceutical Powders", "Microencapsulation Technology", "Dry Powder Coating: A Novel Technique for Film Coating Solid Substrates", "Pharmaceutical Patents", "Formulation Design—Application of

Principles of Materials Science”, lectures presented at the University of Navarro, College of Pharmacy, Navarro, Spain, May 15-June 3, 2006.

35. “Thermal Processing of Pharmaceutical Powders” presented at Astellas, Shizuoka, Japan, July 17, 2006.
36. “Thermal Processing of Pharmaceutical Powders” presented at Dainippon Sumitomo Pharm, in Osaka, Japan, July 18, 2006.
37. “Pharmaceutical Patents” presented at Aichi Gakuin University, Nagoya, Japan, July 2006.
38. “Physicochemical Factors Influencing Drug Release From Solid Dosage Forms Film Coated by Either a Wet or a Dry Process” presented at The 4th New Pharmaceutical Technology and Engineering Conference, Tokyo, Japan, July 20, 2006.
39. “Physical and Chemical Properties of Melt Extruded Polymeric Drug Delivery Systems”, 1st International Symposium on Hot Melt Extrusion, March 21-22, 2007, DeGussa, Frankfurt, Germany.
40. “Novel Approaches to Prevent Physical Aging of Acrylic Polymers”, 8th EUDRAGIT[®] Workshop, April 10-11, 2007, DeGussa, New Brunswick, NJ.
41. “Physical and Chemical Properties of Melt Extruded Polymeric Drug Delivery Systems”, 2nd International Symposium on Hot Melt Extrusion, Nuremberg, Germany, September 2007.
42. “Factors Influencing the Selection of Components and Processing Equipment for Pharmaceutical Applications of Hot Melt Extrusion” APV Conference, Ludwigschafen, Germany, March 2008.

XI. Referee for the Following Journals

1. Journal of Pharmaceutical Sciences
2. Science
3. Pharmacology Biochemistry and Behavior
4. International Journal of Pharmaceutics

5. Journal of Microencapsulation
(Member of International Board of Editors)
6. Pharmaceutical Research
7. Journal of Membrane Science
8. Life Sciences
9. S.T.P. Pharma Sciences (France)
(Member of Editorial Board)
10. Sciences Techniques et Pratiques Pharmaceutiques (Fr.)
11. Journal of Controlled Release
12. European Journal of Pharmaceutics and Biopharmaceutics – USA Editor
13. International Journal of Pharmaceutical Compounding
14. Drug Development and Industrial Pharmacy
(Member of Editorial Board)
15. Pharmaceutical Development and Technology
(Member of Editorial Board)
16. Drug Delivery Technology
(Member of Editorial Advisory Board)
17. European Journal of Pharmaceutics
(Member of Editorial Board)
18. Journal of Pharmacy and Pharmacology
19. European Journal of Pharmaceutical Sciences
(Member of Editorial Board)
20. Tablets and Capsules Magazine
(Member of Editorial Advisory Board 2003)
21. Current Drug Delivery
22. AAPS PharmSci Tech
23. Biomaterials
24. Journal of Applied Polymer Science
25. Journal of Drug Delivery Science and Technology

XII. Personnel Supervised

1. Michael R. Harris, Ph.D. (May, 1981) Director, Warner Lambert Corp., Morris Plains, New Jersey.
2. George W. Cuff, Ph.D. (May, 1982) Senior Research Scientist, Eli Lilly Co., Indianapolis, Indiana.
3. Janet C. Walkow, Ph.D. (August, 1982) Manager, Rorer Pharmaceuticals, Pennsylvania
4. Chi-Tze Ku, M.S. (May, 1983) Research Chemist, Bristol Myers Squibb, New Brunswick, N.J.
5. Juliette Castillo, M.S. (May, 1983) Lecturer, University of Honduras.
6. Professor N.T. Naidoo, Ph.D. (1981-1982) Post-doctoral Research Scholar, Rhodes University, Grahamstown, South Africa.
7. Philippe Maincent, Ph.D. (1981-1983) Post-doctoral Research Fellow from the University of Paris, SUD, France. Presently Professor, Nancy University, France.
8. Masaki Yamamoto (1982-1983) Visiting Scientist, Takeda Chemical Industries, Osaka, Japan.
9. Kenzo Ichizuka (1983-1984) Takeda Chemical Industries, Osaka, Japan, Visiting Scientist.
10. Claud G. Cameron, Ph.D. (May, 1986) Watson Laboratories, Corona, CA.
11. Robert O. Williams, III, Ph.D. (Dec., 1986) Associate Professor, College of Pharmacy, The University of Texas at Austin, Austin, Texas.
12. Steven M. Liebowitz, Ph.D. (1986) Visiting Scientist, Senior Research Scientist, Schering Corp., Kenilworth, NJ
13. Roland Bodmeier, Ph.D. (Dec., 1986) Professor, University of Berlin, Berlin, Germany.
14. Kuei-Tu Chang, Ph.D. (Dec. 1986) Senior Research Director, Rexall Sundown, Boca Raton, Florida.
15. Rafael E. Sarabia, Ph.D., (1985-86) VP, Research & Development, Cima Laboratories, Eden Prairie, Minnesota.

16. George Woo, Ph.D. (May 1988) Research Scientist, Westwood Pharmaceuticals, New York.
17. Susan Ashley, Ph.D. (May 1988) Research Scientist, Merck Sharp & Dohme, West Point, PA.
18. Jay Thiele, Ph.D. (Dec., 1988) Director of Process Development, Genta Inc., San Diego, CA.
19. Mark Schulze, Ph.D. , (Dec., 1989) Research Scientist, Glaxo, Inc., North Carolina
20. Mark Coffin, Ph.D. (Dec. 1990) Research Scientist, Glaxo, Inc., North Carolina
21. Michelle Jenquin, Ph.D., (Dec., 1990) Research Scientist, Rhone-Poulenc Rorer Pharmaceuticals, Horsham, Pennsylvania
22. Motokazu Iwata, (1990-91) Visiting Scientist, Dainippon Corp., Osaka, Japan
23. Marcelo Omelczuk, Ph.D., (Dec. 1991) Research Scientist, Sandoz Inc., East Hanover, N.J.
24. Sakae Obara, Ph.D., (1992-93) Visiting Scientist, Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
25. Jose Gutierrez-Rocca, Ph.D. (May 1993) Professor at University of South Miami, Florida
26. Steven E. Frisbee, Ph.D., (Dec. 1994), Senior Research Scientist, Biovail Technologies, Ltd., Chantilly, Virginia.
27. Carolyn Aitken Nichol, Ph.D., Postdoctoral Fellow, (1994-1995), Assistant Professor, M.D. Anderson Cancer Center, Houston, Texas.
28. Unchallee Kositprapa, Ph.D., Research Scientist, (1996) Cima Laboratories, Brooklyn Park, Minnesota.
29. Julia Schulze, Visiting Scientist, (1997-1998), University of Berlin, Berlin, Germany.
30. Stephan Promeluk, (1997) Visiting Scientist, Germany.
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XIII. Publications

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11/21/2008

Exhibit D

CV of Dr. Sawchuk

RONALD J. SAWCHUK

PERSONAL DATA

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Born: May 29, 1940, Toronto, Ontario, Canada

Marital Status: Married, three children

Citizenship: Dual: U.S. and Canadian

EDUCATION

1959	(High School)	Oakwood Collegiate Institute, Toronto Secondary School Grade XIII)
1963	B.Sc. Phm.	University of Toronto, Toronto Ontario College of Pharmacy Licentiate No. 10748
1966	M. Sc. Phm.	University of Toronto, Toronto
1972	Ph.D.	University of California, San Francisco Pharmaceutical Chemistry (Pharmacokinetics)

PROFESSIONAL AND ACADEMIC EXPERIENCE

1963 - 1965	Teaching Assistant, University of Toronto
1966	Community Pharmacist (part-time), Toronto
1966 - 1968	Teaching Assistant, University of California
1971 - 1972	Instructor in Pharmaceutics, University of Minnesota
1972 - 1977	Assistant Professor of Pharmaceutics, University of Minnesota
1977 - 1983	Associate Professor of Pharmaceutics, University of Minnesota
1974 - 1982	Associate Director, Clinical Pharmacokinetics Laboratory, U of Minnesota
1982 - 1995	Director, Clinical Pharmacokinetics Laboratory, College of Pharmacy, U of Minnesota
1983 - present	Professor of Pharmaceutics, University of Minnesota
1983 - 1989	Director of Graduate Studies in Pharmaceutics, University of Minnesota
1983 - 1986	Acting Head, Department of Pharmaceutics, University of Minnesota
1984 (summer)	Quarter Leave, Sandoz Pharma, Pharmacokinetics and Drug Metabolism Dept., Basel, Switzerland (M. Lemaire)
1991 - 1994	Director of Graduate Studies in Pharmaceutics, University of Minnesota
1992 (Summer)	Quarter Leave, Sandoz Pharma, Drug Safety, Basel, Switzerland (W. Niederberger)
1996 - 1999	Member, Board of Directors, Century Mortar Club
1997 (Spring)	Semi-Quarter Leave, Toyama Medical and Pharmaceutical University, Japan (H. Sato)
1997 (Summer)	Semi-Quarter Leave, Novartis AG, PKDM, Basel, Switzerland (J. Vonderscher)
1998 - 1999	Head, Department of Pharmaceutics, University of Minnesota
2001 (Summer)	Faculty Development Leave, Novartis AG, PKDM, Basel, Switzerland (M. Lemaire)

CURRENT PROFESSIONAL RESPONSIBILITIES

1972 - present	Member, Graduate Program in Pharmacutics, University of Minnesota
1983 - present	Professor of Pharmaceutics, University of Minnesota
1982 - present	Consultant to the pharmaceutical industry
1995 - present	Director, Bioanalytic and Pharmacokinetic Services, University of Minnesota
1995 - present	Editorial Board, <i>Saudi Pharmaceutical Journal</i>
1996 - 2007	Editorial Board, <i>Journal of Pharmaceutical Sciences</i>
1996 - present	Member, Graduate Program in Neurosciences, University of Minnesota
2001 - present	Member, Graduate Program in Experimental and Clinical Pharmacology, U of M
2002 - present	Member, Graduate Program in Social, Administrative and Clinical Pharmacy, U of M
2008 - present	Editorial Advisory Board, <i>AAPS Journal</i>
2009 - present	Editorial Board, <i>Xenobiotica</i>

OTHER PROFESSIONAL ACTIVITIES AND RESPONSIBILITIES

Prepared two videotapes on "Pharmacokinetics" for undergraduate instruction
Co-editor of a book with James Blanchard, Ph.D. and B.B. Brodie, Ph.D., entitled "Principles and Perspectives in Drug Bioavailability." S. Karger, Publisher, 1979
Assistant Director, Clinical Pharmacokinetics Laboratory, 1974-82
Consultant in the Establishment and Implementation of the Drug Quality Assurance Program, United Hospitals, St. Luke's Division, St. Paul, 1975
Participant in Critical Incidents Workshop, PDI - College of Pharmacy, 1977
Assessor in the Pharmacy Assessment Exercises, 1978
Coordinator for Continuing Education in Pharmacy, TV Series 1978, 1980
Expert, Bureau of Drugs and Biologics, Food and Drug Administration, 1982-84
Screening Committee, Abstracts, Basic Pharmaceutics Section, APS, APhA, 1981
Review of Grants, Medical Research Council (Canada) 1980-86
Review of Grants, British Columbia Health Care Foundation, 1981-84
Advisory Consultant, Site Visit Team NIH (NINCDS) Yale University School of Medicine, October 1979
Member, Site Visit Team NIH (NINCDS) University of Utah School of Medicine, January 1983
Member, Special Pharmacology Study Section NIH, April-June 1988
Review of Grants, Idaho State Board of Education, 1989-91
Review of Grants, Greater Minnesota Corporation, 1990-91
Organizer and Symposium Co-Chair, "Microdialysis in Drug Metabolism and Disposition Studies", for the Annual AAPS Meeting, San Antonio TX, 1992
Symposium Co-Chair, "Kinetic and Dynamic Challenges of the 90's", for the Annual AAPS Meeting, San Diego, CA, 1994
Organizing Committee Member for the NATO Advanced Study Institute, "Pharmacokinetics: From Theory to Practice", Erice, Italy, April 5-16, 1994
Co-organizer and Participating Instructor, "Pharmacokinetics for the Pharmacist and Pharmaceutical Scientist" University of Milan, Varese, September 10 -15, 1995.
Member, Board of Directors, Century Mortar Club, 1996-present.
National Advisory Committee, FAMU RCMI Program, Tallahassee, FL 1996-present
Co-organizer and Participating Instructor, "Pharmacokinetics for the Biomedical and Pharmaceutical Scientist" University of Milan, Varese, September 7 -12, 1997.
Scientific Advisory Committee, 1st Symposium on Microdialysis and Pharmacokinetics, Leiden, The Netherlands April 1998
Organizer and Participating Instructor, "Pharmacokinetics for the Biomedical and Pharmaceutical Scientist" University of Malta, Msida, September 6 -15, 1998.
Founder, Microdialysis Focus Group, American Association of Pharmaceutical Scientists, 1998.
Scientific Advisory Committee, 2nd International Symposium on Microdialysis in Drug Research and Development, Stockholm, Sweden, June 2000

Chair, Microdialysis Focus Group, American Association of Pharmaceutical Scientists, 1998-2000.
Co-Chair, Organizing Committee, 3rd International Symposium on Microdialysis in Drug Research and Development, Minneapolis, MN, USA, June 2002
Visiting Professor, Guilin Medical College, Guilin PRC (2002-2007)
Scientific Advisory Committee, 4th International Symposium on Microdialysis in Drug Research and Development, Vienna, Austria, June 2004
Scientific Advisory Committee, Abbott Laboratories, for the FDA Critical Path Initiative, September 2004
Scientific Advisory Committee, 5th International Symposium on Microdialysis in Drug Research and Development, Leiden, The Netherlands, June 2006
GLP-1 Scientific Advisory Panel, Medtronic, Minneapolis, MN, April 2009-present

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

American Association of Pharmaceutical Scientists (Fellow)
American Association for the Advancement of Sciences (Fellow)
American Pharmacists Association (APhA)
American Society for Pharmacology and Experimental Therapeutics
International Society of Anti-Infective Pharmacology
International Society for the Study of Xenobiotics
Technology Park, Heidelberg, Germany
Century Mortar Club (Board of Directors, 1996-98)
Rho Chi Honor Society

SCHOLARSHIPS, HONORS AND AWARDS

1964	Scholarship, Canadian Foundation for the Advancement of Pharmacy
1965-66	National Research Council of Canada
1965	Warner-Lambert Research Fellowship
1968-70	National Institute of Health (NIH) Training Grant
1981-82	Teacher of the Year, College of Pharmacy, University of Minnesota
1986	Recipient of Horace T. Morse-Amoco Foundation Award
1988	Fellow, American Association of Pharmaceutical Scientists
1990	Fellow, American Association for the Advancement of Science
1996	Hallie Bruce Memorial Lecture Award
1997	Fellowship, Japanese Society for the Promotion of Science
1999	Meritorious Manuscript Award, American Association of Pharmaceutical Scientists
2001	Weaver Medal of Honor
2004	Distinguished Lecture, Creighton University School of Pharmacy and Health Professions
2005	Academy of Distinguished Teachers, University of Minnesota
2006	Distinguished Lecture, Temple University School of Pharmacy
2007	APhA Research Achievement Award in the Basic Pharmaceutical Sciences

COMMITTEE APPOINTMENTS

COLLEGE OF PHARMACY

1972-73, 1973-74	Student American Pharmaceutical Association Minnesota Chapter (Faculty Advisor)
1972-75	Student Admissions and Academic Standing Committee, College of Pharmacy
1972-73	Task Force on College of Pharmacy Organization
1973-74	Continuing Education Committee
1972-78	Admissions Committee for Pharm.D. Program, College of Pharmacy (Chair 1973-74; 1977-78)
1974-75	University of Minnesota Health Sciences B/C Implementation Committee
1974-77	Constitution and By-laws Committee
1974-75	Unit K Committee, Graduate School

1975-76	Task Force on Pharm.D. Admissions
1976-78	Professional Education Committee
1977-78	Task Force on Travel
1977-78	Anatomy, Physiology, Pathology Study Group
1977-78	Drug Product Design and Evaluation Study Group
1976-78	Search Committee for Biopharmaceutics Faculty Member
1977-78	Search Committee for Assistant Director HCMC
1977-78	Search Committee for Research Associate, CEP Project D-1 (Chairman)
1978-79	Pharm.D. Program Planning Committee (Chairman)
1978-79, 1979-80	Computer Systems Committee (Chairman)
1979-80	Professional Education Committee (Chairman)
1980-81	Educational Policy Committee (Chairman)
1980-82	Externship Committee
1981-82	Academic Standing Committee
1981-83	Health Sciences Policy and Review Council
1981-82	Graduate Faculty Nominations and Course Proposals Committee
1982-83	Academic Standing Committee (Chairman)
1982-83	Advisory Committee on Animal Care Facilities
1983-85	Council of Directors of Graduate Studies
1982-83	Task Force on Computers
1983	Search Committee for Department Chairman (Chairman)
1983	Search Committee for Clinical Faculty at HCMC
1984	Ad Hoc Committee on External Pharm.D. Program
1984	Executive Committee (Chairman)
1984	Search Committee for Dean of College of Pharmacy
1984	Search Committee for Psychiatry Position, St. Paul-Ramsey Medical Center
1984	Search Committee for Clinical Faculty at Hennepin County Medical Center
1985	Endowed Chair in Pharmaceutics Search Committee (Chair)
1985	Assistant Professor in Pharmaceutics Search Committee (Chair)
1985	Appointment, Promotion and Tenure Committee
1985	Space Committee
1985	Clinical Assistant Professor (MMC) Search Committee
1985-89	Executive Committee
1986-87	Appointment, Promotion and Tenure Committee (Chair)
1986-90	Educational Policy Committee
1986-87	Subcommittee of Educational Policy Committee
1986	Search Committee for Endowed Chair (Chair)
1986-87	College of Pharmacy Strategic Planning Committee
1986-87	Subcommittee of Strategic Planning Committee to Develop College Goals and Objectives
1987-90	Continuing Pharmacy Education Advisory Committee (Chair)
1987-88	Admissions Committee
1988-89	Admissions Committee (Chair)
1989-91	Promotion and Tenure Committee
1991-92	Promotion and Tenure Committee (Chair-Elect)
1991-92	General Research Support Committee
1992-93	Promotion and Tenure Committee (Chair)
1992-93	General Research Support Committee
1993-94	Academic Standing Committee (Chair-Elect)
1994-95	Academic Standing Committee (Chair)
1994-98	College Computer Committee
1995-96	Promotion and Tenure Committee
1995-96	Internal Organization and Leadership Task Force
1996-97	Nontraditional Pharm.D. Task Force
1997-98	Search Committee for Endowed Chair in Geriatric Pharmacotherapy

1997-98	Admissions Committee
1997-98	Search Committee for Immunotherapy Faculty Position (Chair)
1998-2000	Search Committee for Pharmaceutics Faculty Position
2000-2001	Educational Policy Committee
2001-2002	Search Committee for ECP Faculty Position
2001-2002	Educational Policy Committee (Chair)
2001-2002	Search Committee for Pharmaceutics Faculty Position
2001-2002	College of Pharmacy Phar. Sci. 2020 Committee, Capital Campaign (Co-Chair)
2001-2004	College of Pharmacy Faculty Consultative Committee
2002-2003	Educational Policy Committee (Past Chair)
2002-2003	College of Pharmacy Collegiate Review Committee (Chair)
2002-2003	College of Pharmacy Central Council (Faculty Representative)
2002-2003	College of Pharmacy Instructional Development Working Group for the Duluth Expansion
2003-2005	Search Committee for Pharmaceutics Faculty Position at UMD (Chair)
2004-2007	College of Pharmacy Assessment Committee
2005-2006	Search Committee for Endowed Chair in Geriatric Pharmacotherapy
2006-2007	Search Committee for Pharmaceutics Faculty Position

UNIVERSITY COMMITTEE APPOINTMENTS

1974-78	Subcommittee on Academic-Industrial Interface, Academic Relations Committee, 3M Technical Forum
1975-76	Health Sciences Primary Health Care Program Committee (Alternate), Solicitor for the University of Minnesota Consolidated Fund Drive
1977-78	Alternate Senator (U. of Minnesota)
1978-81	Senator (U. of Minnesota)
1984-85	Health Sciences Learning Resources Committee
1986	College Delegate to All-University Single Quarter Leave Working Group, Academic Affairs
1989	Health Sciences Policy and Review Council, Graduate School
1989-91; 1991-93	Biological Sciences (formerly Plant and Animal Sciences) Policy and Review Council, Graduate School
1991-93	Graduate Faculty Nominations Subcommittee, Biological Sciences Policy and Review Council, Graduate School
1992-93	Graduate Faculty Nominations Subcommittee (Chair), Biological Sciences Policy and Review Council, Graduate School
1995-1998	Biological Sciences Policy and Review Council, Graduate School
1997-98	Faculty Research Development Proposal Review Committee for the Academic Health Center
2001-2004	Academic Health Center Faculty Consultative Committee
2001-2002	SCFP Subcommittee on Twin Cities Facilities and Support Services (STCFSS)
2003	AHC Seed Grant Review Committee
2003	AHC FCC Internal Screening Committee for Academy of Excellence Nominees
2004-2007	All-University Honors Committee, University of Minnesota

STATE, NATIONAL, AND INTERNATIONAL COMMITTEE APPOINTMENTS

1974-76	Representative to AACP Council of Faculties
1977-78	AACP Task Force on Guidelines for Pharm.D. Accreditation
1980-82	Academic Advisory Committee, Kellogg Pharmaceutical Scientist Program
1981	Screening Committee for Academy of Pharmaceutical Sciences, Basic Pharmaceutics Section
1989-present	Member, Scientific Committee, International Pharmaceutical Technology Symposium (FIP)
1990	Academic Affairs Committee, AACP (Member)
1990	Program Committee, Controlled Release Society Annual Meeting (Member)

1989-91	Continuing Education Committee, State Board of Pharmacy (Member)
1990-95	USP Committee of Revision (Member)
1991-93	NIH/NINDS Antiepileptic Drug Development Program (Consultant)
1995	Fellows Nominations Committee for AAPS, PPDM Section
1995	Screening Committee for AAPS PPDM Section Abstracts
1997-2000	Fellows Nominations Committee for AAPS, PPDM Section
1999-2000	Committee on AAPS Section Structure and Procedure Guideline
2000-2001	PPDM Vice Chair, American Association of Pharmaceutical Scientists
2000-2002	Co-Chair, Organizing Committee, 3 rd International Symposium on Microdialysis in Drug Research and Development
2001-2002	PPDM Chair Elect, American Association of Pharmaceutical Scientists
2001-2002	Annual Program Planning Committee, American Association of Pharmaceutical Scientists
2001-2002	Program Coordinating Committee, American Association of Pharmaceutical Scientists
2002-2003	PPDM Section Chair, American Association of Pharmaceutical Scientists
2002-2003	PPDM Committee for Graduate Student Symposium Awardees, American Association of Pharmaceutical Scientists
2002-2003	Short Course Program Review Team, American Association of Pharmaceutical Scientists
2003-2004	PPDM Section Past-Chair, American Association of Pharmaceutical Scientists
2004-2007	Member-at-Large, American Association of Pharmaceutical Scientists Executive Council
2004-2006	Clinical and Operational Working Group (CORWG), NASA
2004-2005	AAPS Executive Council Liaison to the Clinical Sciences section of AAPS
2005-2006	AAPS Executive Council Liaison to the DDD section of AAPS
2005-2006	AAPS Executive Council Liaison to the PDD section of AAPS
2005-2006	AAPS Executive Council Liaison to the 2006 Annual Meeting Program Committee
2005-2006	AAPS Executive Council Liaison to the 2006 Annual Meeting Screeners
2005-2006	AAPS Executive Council Liaison to the 2006 Program Coordination Committee
2006	AAPS Reference Resources Task Force
2006-2007	AAPS Executive Council Liaison to the APQ section of AAPS
2006-2007	AAPS Executive Council Liaison to the PT section of AAPS
2006-2007	AAPS Executive Council Liaison to the International Affairs Committee
2009-present	Epilepsy NINDS Steering Committee
2009-present	NINDS Consortium to Study Bioequivalence of AED Products

INVITED PRESENTATIONS

Continuing Education Program (6 hours) Minneapolis, MN, 1973.
 Upper Midwest Hospital Conference, 1974.
 Continuing Education Program (6 hours) Rochester, MN, 1974.
 University of Illinois, Chicago, IL, 1974.
 Department of Clinical Pharmacology, University of Minnesota, 1974.
 AACP Annual Meeting and Teachers' Seminar (Workshop Leader), Lake Kiamesha, NY, 1975.
 Debate Symposium, "Drug Product Selection," St. Paul, MN, 1977.
 Continuing Education for Minneapolis Veteran Pharmacists (2 hours), Minneapolis, MN, 1978.
 Continuing Education in Pharmacy (2 hours), Mankato, MN, 1978
 Continuing Education in Pharmacy "Seminar at Sea" (4 hours of instruction), 1978.
 HPLC Workshop, Invited Lecturer, Bloomington, MN, 1978.
 University of Kentucky, Lexington, KY, 1979.
 American Association of Clinical Chemists, Midwest Section, Minneapolis, MN, 1979.
 University of Illinois, Chicago, IL, 1979.
 Smith Kline Corp., Philadelphia, PA, 1979.
 Department of Pathology, St. Cloud Hospital, St. Cloud, MN, 1979.
 Comprehensive Epilepsy Program, Minneapolis, MN, 1979.
 University of North Carolina, Chapel Hill, NC, 1979.
 Burroughs Wellcome Co., Research Triangle Park, NC, 1979.

St. Paul-Ramsey Medical Center, St. Paul, MN, 1989.

Continuing Education in Pharmacy (4 hours) Minneapolis, MN, September-October, 1981.

Medical Research Council of Canada, Visiting Professor, University of British Columbia, Vancouver, 1982.

Invited Lecturer, National Institutes of Health, Epilepsy Branch, Bethesda, MD, 1982.

Geriatric Research, Education and Clinical Center, Bloomington, MN, September, 1982.

Continuing Education in Pharmacy (6 hours), Duluth, MN, September, 1982.

Ciba-Geigy, Pharmaceuticals Division, Ardsley, December 2, 1982.

Swiss Federal Institute of Technology, Zurich, Switzerland, June 19, 1984.

Biopharmacy Division, Sandoz AG, Basel, Switzerland, June 22, 1984.

Biopharmacy Division, Sandoz AG, Basel, Switzerland, July 24, 1984.

"Cyclosporine Pharmacokinetics in the Rabbit: In Vivo Disposition and In Situ Absorption Studies," Rhone-Poulenc Visiting Professor, University of Toronto, Ontario, February 5, 1985.

"Pharmacokinetics and Pharmacodynamics," Drug Therapy Symposium VI, St. Paul, MN, February 27, 1985.

"Absorption and Disposition Studies with Cyclosporine," Sandoz, AG, Basel, Switzerland, July 15, 1985.

"Absorption of Cyclosporine from Rabbit Small Intestine Using an In Situ Perfusion Model," Vorstand des Instituts für Pharmazie U. Lebensmittelchemie der Ludwig-Maximilians-Universität, Munich, West Germany, July 17, 1985.

"Analytic considerations in the Investigation of the Pharmacokinetics of Cyclosporine," Medizinischen Hochschule, Hanover, West Germany, September 11, 1985.

"Mixed-Order Absorption of a Sustained Release Carbamazepine Tablet in Humans," Institut für Pharmazeutische Technologie der Johann Wolfgang Goethe-Universität, Frankfurt am Main, West Germany, May 15, 1986.

"Simultaneous First- and Zero-order Absorption of Commercial Carbamazepine Tablets," 5th Symposium on Biopharmaceutics and Pharmacokinetics, Piestany, Czechoslovakia, May 22, 1986.

"Simultaneous First- and Zero-order Absorption of Tegretol in Human Volunteers," National Institutes of Health, Epilepsy Branch, NINCDS, Bethesda, MD, November 6, 1986.

"Comparison of Plasma AUCs using the Traditional Point-by-Point and Pooled Sample Methods: Application in the Analysis of Human Pharmacokinetics of Carbamazepine and its metabolites," Food and Drug Administration, Rockville, MD, July 20, 1987.

"Pharmacokinetics in Contemporary Pharmacy Practice," Minneapolis Veteran Pharmacists Association, Richfield, MN, September 15, 1987.

"The Absorption and Disposition Kinetics of Carbamazepine and its Metabolites in Humans," Ciba-Geigy, Summit, NJ, July 23, 1987.

The following four lectures were given in Beijing, Chengdu, and Guilin, China during a visit sponsored by the Chinese Academy of Medical Sciences in late October/early November 1987:

1. "Theory and Application of a Pharmacokinetic Model in Individualizing Dosing Regimens for the Aminoglycosides."
2. "First- and Zero-order Absorption of Carbamazepine from Commercial Tablets in Epileptic Patients and Normal Volunteers."
3. "Significance of Nonlinear Disposition Kinetics in the Adjustment of Dosing Regimens."
4. "Relative Bioavailability of Phenytoin Formulations: Problems in Assessment Due to Michaelis-Menten Elimination Kinetics."

"Does Tegretol need to be Dosed TID?" Comprehensive Epilepsy Program, Minneapolis, MN, March 21, 1988.

"The Kinetics of Absorption of Carbamazepine (Tegretol) and its Metabolism in Humans," Vorstand des Instituts der Pharmazie, Ludwig-Maximilians Universität, Munich FRG, June 8, 1988.

"Pharmacokinetic and Physiologic Considerations in Oral Controlled Drug Delivery," Novel Drug Delivery Symposium, Minneapolis, MN, September 20, 1988.

"Clinical Applications of the Two-Compartment Open Model," Regional Kidney Disease Program, Hennepin County Medical Center, Minneapolis, MN, November 16, 1988.

The following five lectures were presented in a Continuing Education in Pharmacy Program: "Concepts and Applications in Pharmacokinetics, Parts I and II"; "Therapeutic Response and Toxicity"; "Monitoring Drug Therapy"; and "Bioavailability and Bioequivalence", St. Thomas, Virgin Islands, March 8-13, 1989.

"The Pharmacokinetics of Zidovudine (AZT) with Some Observations on the Interaction with Probenecid," Queen's University of Belfast, Belfast, North Ireland, June 15, 1989.

- "Pharmacokinetic and Analytical Considerations in Monitoring Zidovudine (AZT) Levels in Children with Aids," Fourth International Congress on Pediatric Laboratory Medicine, Washington, DC, August 23, 1989.
- "Inhibition of Zidovudine Metabolism and Excretory Transport," Department of Pharmacodynamics, Semmelweis University of Medicine, Budapest, Hungary, September 13, 1989.
- "Evaluating Bioequivalence," Western Michigan Society of Hospital Pharmacists, Grand Rapids, MI, March 2, 1990.
- "Effect of Temperature and Medium of Analysis on Cyclosporine Concentration," Canadian Consensus Meeting on Cyclosporine Monitoring, Minaki Lodge, Canada, May 11, 1990.
- "Studies of the Interaction between Zidovudine (AZT) and Probenecid in Animals and Humans." Pharmaceuticals and Process R & D, Ayerst Laboratories Inc., Rouse's Point, NY, August 17, 1990.
- "Mechanistic Studies to Examine the Effect of Probenecid on the Brain Uptake of Zidovudine," Shanghai Medical University, Shanghai, P.R.C., October 13, 1990.
- A lecture series (16 hrs) on the topic of "Clinical Pharmacokinetics and Therapeutic Drug Monitoring" was given to staff members of the Chinese Academy of Medical Sciences and Hospital Pharmacists, Beijing, P.R.C., October 15-20, 1990.
- "Comparative Intestinal Absorption of Compounds of Varying Lipophilicity, and the Effect of Absorptive Water Flux." Lederle Laboratories, Pearl River, NY, September 12, 1991.
- "Analysis of Zidovudine Distribution into Specific Brain Regions Utilizing Microdialysis," Bristol Myers-Squibb Research Institute, Princeton, NJ, September 17, 1991.
- "Distribution of AZT Into Specific Brain Regions in the Rabbit Utilizing Microdialysis," University of Illinois College of Medicine, Peoria, IL, October 9, 1991.
- "Studies on the Transport of Nucleosides into Specific Brain Regions Using Microdialysis with *In Vivo* Calibration." University of Florida, College of Pharmacy, Gainesville, FL, December 6, 1991.
- "Analysis of Zidovudine Distribution into Specific Brain Regions Utilizing Microdialysis," University of Arizona College of Pharmacy, Tucson, AZ, February 17, 1992.
- "Regional Considerations in the In Situ Intestinal Absorption of Glycylcycline and Minocycline, and the Effect of Solvent Drag," Lederle Laboratories, Pearl River, NY, May 11, 1992.
- "Comparative Absorption of Fluorothymidine and Related Nucleosides in Different Anatomic Intestinal Regions," Lederle Laboratories, Pearl River, NY, May 11, 1992.
- "Microdialysis Techniques for the Study of Drug Distribution, and the Problem of Recovery *In Vivo*," Europhor Toulouse, France, June 19, 1992.
- "The Use of Microdialysis in Studying the Distribution of Exogenous Substances in Biological Tissues," Sandoz Pharma, Basel Switzerland, June 24, 1992.
- "Inhibition of Brain Distribution and Systemic Clearance of AZT by Probenecid," Sandoz Pharma, Basel Switzerland, June 30, 1992.
- "Uptake of Zidovudine (AZT) into Rabbit Brain Using Microdialysis with *In Vivo* Calibration," Knoll AG, Ludwigshafen, Germany, July 1, 1992.
- "Microdialysis in the Study of the Distribution and Metabolism of Exogenous Substances," Pharmaceutical Chemical Institute, University of Heidelberg, Heidelberg, Germany, July 2, 1992.
- "The Relationship Between Urine and Plasma Concentrations of Lipophilic Drugs: Implications for Therapeutic Drug Monitoring," Sandoz Pharma, Basel Switzerland, July 8, 1992.
- "Estimation of the Elimination Rate Constant for Metabolites which Exhibit Formation-Rate Limited Disappearance," Sandoz Pharma, Basel Switzerland, July 23, 1992.
- "Experimental Determination of Free Tissue Levels Using Microdialysis," 4th Biennial Conference on Chemotherapy of Infectious Diseases and Malignancies, Prague, Czechoslovakia, August 31, 1992.
- "*In Situ* Intestinal Absorption of Tetracycline Derivatives and the Effect of Absorptive Water Flux," Lederle Laboratories, Pearl River, NY, November 13, 1992.
- "Reversibility of Carbamazepine Autoinduction upon Dose Termination in Normal Volunteers," Abbott Laboratories, Abbott Park, IL, December 2, 1992.
- "Barriers to the Oral Delivery of Drugs," Wyeth-Ayerst Research, Radnor, PA, February 23, 1993.
- "Preliminary Results of Studies which Examine the Distribution of the NMDA Antagonist, EAB 515, to Rat Brain," Sandoz Pharma, Basel Switzerland, April 26, 1993.
- "Microdialysis Calibration Using the Zero-Net Flux Method and Retrodialysis in Studying the Distribution of Exogenous Substances to Rat Brain," Sandoz Pharma, Basel Switzerland, April 26, 1993.

- "Investigation of the Pharmacodynamics of the NMDA Antagonist, EAB 515, in the Rat During Intravenous and Intracerebroventricular Administration." Sandoz Research Institute, Berne, Switzerland, April 28, 1993.
- "Comparative Distribution of AZT to Brain Tissue Extracellular Fluid During Intravenous and Intracerebroventricular Infusion." Food and Drug Administration, Rockville, MD, May 21, 1993.
- "Interspecies Scaling of Pharmacokinetics in the Evaluation and Development of New Antiepileptic Drugs." Natural Resources Research Institute, University of Minnesota—Duluth, Duluth, MN, August 11, 1993.
- "Application of Pharmacokinetic Principles in Practice." Minneapolis Veteran Pharmacists Association, St. Louis Park, MN, September 21, 1993.
- "Microdialysis as a Tool to Study Drug Delivery to the Brain." North Jersey American Chemical Society Drug Metabolism Discussion Group, Somerset, NJ, October 7, 1993.
- "Graduate Studies and Research Careers in Pharmaceutics." University of Minnesota—Duluth Department of Chemistry, Duluth, MN, December 3, 1993.
- "Microdialysis in Pharmacokinetic and Drug Metabolism Studies." 95th Annual Meeting, American Society for Clinical Pharmacology and Therapeutics, New Orleans, LA, April 1, 1994.
- "Modeling and Simulation of Complex Pharmacokinetic Systems." NATO Advanced Study Institute, Erice, Italy, April 12, 1994.
- "Microdialysis in the Study of Drug Distribution." NATO Advanced Study Institute, Erice, Italy, April 13, 1994.
- "Pharmacokinetic Studies Utilizing Microdialysis." Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS, May 2, 1994.
- "Pharmacokinetic Studies Utilizing Microdialysis and On-Line HPLC." 4th International Workshop in Bioanalysis, Lawrence, KS, July 12, 1994.
- "Application of Microdialysis in Pharmacokinetic Studies." Gordon Research Conference in Drug Metabolism, Holderness School, Plymouth, NH, July 20, 1994.
- "Microdialysis and its Application in Pharmacokinetic Studies." Ciba-Geigy, Pharmacokinetics and Bioanalytics Division, Ardsley, NY, July 25, 1994.
- "Assessing Drug Transport in the Brain with Microdialysis." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
- "Applications of Microdialysis in Preclinical Pharmacokinetic Studies." 3M Pharmaceuticals, 3M Center, St. Paul, MN, November 29, 1994.
- "Problems in Assessing the Absorption of Carbamazepine from Sustained Release Dosage Forms in Epileptic Patients." Pharmavene, Inc., Gaithersburg, MD, February 23, 1995.
- "Selected Preclinical Pharmacokinetic Studies with Tacrine." Parke-Davis Pharmaceuticals, Ann Arbor, MI, May 5, 1995.
- "Brain Distribution and Metabolism Studies with Tacrine and Two Hydroxylated Metabolites." Department of Pharmaceutics and Pharmacodynamics, University of Illinois, Chicago, IL, July 28, 1995.
- "Microdialysis and its Application in Preclinical Drug Distribution and Absorption Studies." Chiron Corporation, Emeryville, CA, August 18, 1995.
- "The Principle of Quantitative Microdialysis and its Application in Preclinical Drug Distribution Studies." Genentech, Inc., South San Francisco, CA, October 9, 1995.
- "Graduate Programs and Research Opportunities in Pharmaceutics." 13th Annual Symposium on Pharmaceutical Sciences Graduate Programs, Merrillville, IN, October 21, 1995.
- "Principles of Microdialysis and Applications in Preclinical Drug Distribution and Absorption Studies," Wyeth-Ayerst, Pearl River, NY, December 6, 1995.
- "Microdialysis in Preclinical Drug Distribution Studies." Dupont Merck, Newark, DE, December 8, 1995.
- "Microdialysis and its Application to the Study of Drug/Metabolite Distribution in the Central Nervous System," University of Pittsburgh, Pittsburgh, PA, January 25, 1996.
- "Therapeutic Drug Monitoring: A Fodor's Guide." Hallie Bruce Memorial Lecture Award, Minnesota Society of Health-Services Pharmacists, Minneapolis, MN, April 13, 1996"
- "Preclinical Studies of Drug Distribution to the Brain using Microdialysis." Pharmaceutical Peptides Inc, Cambridge, MA, May 2, 1996.
- "Microdialysis and its Application in Nonclinical Studies of Drug Distribution and Absorption." Bristol-Myers Squibb, Pinceton, NJ, June 24, 1996.
- "Continuous Monitoring by Microdialysis in Neuropharmacokinetic Investigations." Faculty of Pharmacy, University of Tanta, Tanta, Egypt, March 5, 1997.

- "Preclinical Studies of Drug Distribution to the Brain using Microdialysis," Toyama Medical and Pharmaceutical University, Toyama, Japan, April 11, 1997.
- "Application of Pharmacokinetic Principles in Individualizing Aminoglycoside Dosing," Toyama Medical and Pharmaceutical University, Toyama, Japan, April 11, 1997.
- "Preclinical Studies of Drug Distribution to the Brain using Microdialysis," Meiji College of Pharmacy, Japan, April 18, 1997.
- "Individualizing Aminoglycoside Dosing and Once-a-Day Aminoglycosides," Meiji College of Pharmacy, Japan, April 18, 1997.
- "Education of Pharmacists and Pharmaceutical Scientists at the University of Minnesota," 260th Meeting on Continuing Education of Pharmacists, Okuda-Shinmachi, Toyama, Japan, April 26, 1997.
- "Pharmacokinetic Basis of Drug-drug Interactions," Novartis Workshop on Metabolic Drug-Drug Interactions, Schluchsee, Germany, October 14, 1997.
- "Microdialysis and its Application in Preclinical Pharmacokinetic Studies," Merck Research Laboratories, West Point PA, December 16, 1997.
- "Microdialysis and its Application in Preclinical Pharmacokinetic Studies," Merck and Co, Inc. Rahway NJ, December 17, 1997.
- "Brain Distribution Studies employing Microdialysis and Crossover Designs," *1st International Symposium in Drug Research and Development*, Noorwijkerhout, Netherlands, April 3, 1998.
- "Application of Sample Pooling in the Time Domain to Estimate CL, Vss and MRT in the Search for Lead Compounds." Chiron Corporation, Emeryville, CA, May 5, 1998.
- "Microdialysis as a Sampling Technique in Preclinical Pharmacokinetic Studies." Pfizer Inc, Groton CT, June 18, 1998
- "Assessing Drug Delivery to the CNS Using Microdialysis Sampling." School of Medicine, University of Minnesota, Duluth, October 19, 1998.
- "Pharmacokinetic Studies Using Microdialysis Sampling." American Association of Pharmaceutical Scientists Annual Meeting, San Francisco CA, November 18, 1998.
- "Applications of Microdialysis in Pharmacokinetics: Brain, Blood, and Middle Ear Fluid." Bristol-Myers Squibb, Wallingford CT, May 14, 1999.
- "Applications of Microdialysis in Preclinical Pharmacokinetics: Brain, Blood and Middle Ear Fluid." Parke-Davis, Ann Arbor, MI, May 21, 1999.
- "Blood Sample Pooling and the Determination of Mean Residence Times in High-Throughput Pharmacokinetic Screening." Parke-Davis, Ann Arbor, MI, May 21, 1999.
- "Role of controlled release formulations in the steady-state pharmacokinetics and pharmacodynamics of anticonvulsants" Impax Pharmaceuticals, Inc, Hayward CA, June 9, 1999.
- "Investigating Neuropharmacokinetics and Drug Delivery to the CNS using Microdialysis." *8th International Conference on In Vivo Methods: Monitoring Molecules in Neuroscience*. Stony Brook NY, June 19-23, 1999.
- "Use of Microdialysis in Pharmacokinetics" at the 8th BMSR Workshop on *Advanced Methods of Pharmacokinetic and Pharmacodynamic System Analysis*, Marina del Rey, CA June 25-26, 1999.
- "Applications of Microdialysis in Preclinical Pharmacokinetics." Amgen, Inc., Thousand Oaks, CA, June 28, 1999.
- "Pharmacokinetic -Pharmacodynamic Principles in Drug Development." Chiron Corporation, Emeryville, CA, August 20, 1999.
- "Microdialysis and its Application in Pharmacokinetics: Brain, Blood, and Middle Ear Fluid." Abbott Labs, Abbott Park IL Aug 27, 1999.
- "Distribution kinetics of antibiotics to the chinchilla middle ear" Department of Biopharmaceutical Sciences, Uppsala University, Uppsala, Sweden, March 16, 2000
- "In Vivo Microdialysis as a Tool to Study Site Specific Drug Delivery" *Millennial World Congress of Pharmaceutical Sciences*. San Francisco CA, April 17, 2000
- "In Vivo Microdialysis as a Tool to Study Site Specific Drug Delivery" *Engelbreton Symposium on Drug Discovery and Development*. Minneapolis, MN. May 18, 2000
- "In Vivo Microdialysis as a Tool to Study Drug Delivery". *19th Annual Robert S. Rozman Memorial Symposium*, Langhorne PA, May 25, 2000
- "Basic Principles of Microdialysis, Experimental Setup". *Course on Basic and Advanced Aspects of In Vivo Microdialysis*, Stockholm, Sweden, June 14, 2000.

- "Recovery: Basic Idea and Practical Methods". *Course on Basic and Advanced Aspects of In Vivo Microdialysis*", Stockholm, Sweden, June 14, 2000.
- "Studies of Distribution of Antibiotics to the Middle Ear by Microdialysis" *2nd International Symposium on Microdialysis in Drug Research and Development*, Stockholm, Sweden, June 15, 2000.
- "Basic Concepts in Clinical Pharmacokinetics" A 2-Day Course. Abbott Laboratories, Abbott Park IL and Victory Hospital, Waukegan, IL, July 18-19, 2000
- "Microdialysis and its Application in Preclinical Pharmacokinetics: Brain, Blood, and Middle Ear Fluid." Dupont Pharmaceuticals, Wilmington, DE July 12, 2000.
- "Pharmacokinetic –Pharmacodynamic Principles in Drug Development." Abbott Labs, Abbott Park IL Jan 9, 2001
- "Biopharmaceutical and Pharmacokinetic Considerations in Delivering Drug to the CNS" Medtronic Neuro Division, Minneapolis. January 25, 2001
- "Clinical Pharmacokinetic Principles in Drug Development." Novartis Pharma, Tokyo, April 12, 2001
- "In Vivo Microdialysis as a Tool to Study Site Specific Drug Delivery" Showa University, Tokyo, Japan, April 13, 2001
- "In Vivo Microdialysis as a Tool to Study Drug Delivery in Preclinical Studies". Xi'an Medical College, Xi'an, PRC. April 25, 2001
- "Principles of Pharmacokinetics and their Application in Drug Development" Novartis Pharma, Basel, Switzerland, July 3, 2001.
- "Microdialysis and its Application in Preclinical Studies of Drug Delivery to Target Tissues" Boehringer-Ingelheim Pharma KG, Dept. of Pharmacokinetics & Drug Metabolism, Biberach, Germany, July 5, 2001.
- "Estimation of Intrinsic Clearances and Organ Partition Coefficients in an Organ Perfusion Model" Novartis Pharma, Basel, Switzerland, July 26, 2001.
- "Pharmacodynamic Modeling of the Sigmoid Emax Model" Novartis Pharma, Basel, Switzerland, July 31, 2001.
- "Prediction of the Pharmacokinetics of Cefdinir in Children from the Results of Animal Studies. Omnicef® Clinical Advisory Meeting, Dallas, TX, February 9, 2002.
- "Applications of Microdialysis in Studying Drug Delivery to Specific Targets". Guilin Medical School, Guilin PRC, March 28, 2002
- "Microdialysis: A Tool to Study Brain Uptake?" Gordon Research Conference on the Barriers of the CNS, Tilton School, Tilton NH, June 25, 2002
- "A Model for the Distribution of Drugs between Plasma, CSF and Parenchyma", Workshop on Microdialysis Techniques in the CNS, Gordon Research Conference on the Barriers of the CNS, Tilton School, Tilton NH, June 26, 2002
- "Microdialysis in the Study of Drug Delivery to the Central Nervous System", Department of Pharmaceutics, Seoul National University, Seoul, South Korea, November 25, 2002.
- "Investigating Antibiotic Delivery to the Middle Ear". Chong Kun Dang Pharma, Cheonan, South Korea, November 27, 2002
- "Microdialysis and its Application in Preclinical Pharmacokinetic and Drug Delivery Investigations", 32nd Annual Meeting of the Korean Pharmaceutical Society, Seoul, South Korea, November 28, 2002.
- "Applications of Pharmacokinetic Principles in Drug Development". Schering-Plough Research Institute. Kenilworth, NJ. December 19, 2002
- "A Course in Pharmacokinetics in Pharmaceutical Development". Abbott Laboratories. Harrison Conference Center, Lake Bluff, IL. May 15-16, 2003
- "Characterizing Antibiotic Delivery to the Middle Ear for the Treatment of Otitis Media. Biomedical Simulations Resource Workshop: Advanced Methods of PK/PD Systems Analysis. Marina del Rey, CA. June 20-21, 2003.
- "Cerebrospinal Fluid Distribution of Intrathecally Administered Antiviral Nucleosides". Monitoring Molecules in Neuroscience. 10th International Conference on In Vivo Methods. Department of Neuroscience, Karolinska Institutet Stockholm, Sweden. June 24-27, 2003
- "Microdialysis Sampling in Drug Development: Applications in Preclinical Research." Sunrise School, American Association of Pharmaceutical Scientists Annual Meeting, Salt Lake City, UT, October 26, 2003.

- "Clinical Pharmacokinetics in Pharmaceutical Development." Abbott Laboratories. Harrison Conference Center, Lake Bluff, IL. July 23-24, 2003.
- "Microdialysis Sampling in Drug Development: Applications in Preclinical Research." Sunrise School, American Association of Pharmaceutical Scientists Annual Meeting, Salt Lake City, UT. October 26, 2003.
- "The Role of Pharmacokinetics in Drug Discovery." Abbott Laboratories. Harrison Conference Center, Lake Bluff, IL. March 18, 2004.
- "Microdialysis and its Application in Preclinical Pharmacokinetic and Drug Delivery Investigations." CDER, Food and Drug Administration, Rockville, MD. March 29, 2004.
- "Interspecies Scaling, PB-PK modeling and Microdialysis in Antibiotic Drug Development." Novartis Institute for Biomedical Research, Cambridge, MA. April 9, 2004.
- "Does it get to the Target Site? Microdialysis as a Tool to Study Preclinical Drug Distribution and Delivery" Amgen Inc., Thousand Oaks, CA. April 30, 2004.
- "Microdialysis of Antibiotics." 4th International Symposium on Microdialysis in Drug Research and Development, Vienna, Austria, June 19, 2004.
- "The Chinchilla Microdialysis AOM Model" Pfizer Global Pharmaceuticals, New York, NY. June 25, 2004.
- "Advantages of the Chinchilla Microdialysis Model" Scientific Basis for Tissue-Directed Antimicrobial Therapy Symposium, Boston MA, July 21-22, 2004.
- "Evaluating Drug Distribution to the Target Site and Predicting Tissue Exposure in Humans from Animal Data" Scientific Advisory Committee, Abbott Laboratories. The FDA Critical Path Initiative and the Role of Modeling/Simulation in Improving the Efficiency of Drug Development. Lake Forest, IL. September 8-9, 2004.
- "Assessing Drug Delivery to the Target Site: The Role of Microdialysis in Measuring Tissue Exposure in Animals and Humans." Distinguished Lecture, Creighton University School of Pharmacy and Health Professions, Omaha NE, November 30, 2004.
- "Microdialysis—Introduction to Basic Principles and Applications". AAPS Workshop on Microdialysis Principles, Application, and Regulatory Perspectives, Nashville TN, November 4, 2005.
- "A Phase I Open-Label, Dose-Ranging Study to Investigate the Safety and Tolerability of Gabapentin Injection Administered Intrathecally in Individuals with Chronic, Intractable Pain: A Pharmacokinetic Report". Medtronic WHQ, Fridley, MN, February 16, 2006.
- "Public Outreach and AAPS: Students are the Future of Our Association". Temple University School of Pharmacy, Philadelphia, PA. February 20, 2006.
- "Assessing Drug Delivery: Using Microdialysis to Measure Target Site Exposure in Animals and Humans". Wyeth Distinguished Lecture Series, Temple University School of Pharmacy, Philadelphia, PA. February 20, 2006.
- "Pharmacokinetics for Scientists Engaged in Drug Discovery". Lundbeck Research, USA. Paramus NJ. February 24, 2006.
- "Pharmacokinetic Issues related to Intrathecal Drug Dosing". Medtronic WHQ, Fridley, MN, March 15, 2006.
- "TTM Technology: Antibiotic Distribution to Middle Ear Fluid" Abbott Laboratories, Abbott Park, IL. May 16, 2006.
- "Trans-tympanic Membrane (TTM) Drug Delivery to the Middle Ear" Alcon Laboratories, Fort Worth TX. Feb 2, 2007.
- "Bugs and Drugs: Does the Anti-infective Agent get to the Target Site?". Science Luncheon Presentation. APhA Annual Meeting. Atlanta, GA. March 18, 2007
- "Future Perspectives on the Contributions of Microdialysis in Drug Research and Development" Keynote Address. Fifth International Symposium on Microdialysis in Drug Research and Development. Leiden, NE. April 25, 2007.
- "Drug Delivery to the Middle Ear across the Tympanic Membrane for Therapy of Acute Otitis Media". Global Gators 6th Symposium on Clinical Pharmacy and Clinical Pharmacology. Munich, Germany. June 9, 2007.
- "The Pharmacokinetics of Hydrophilic Drugs during Intrathecal Infusion: the Concept of a Targeted Delivery Advantage". Novartis Pharma AG, Basel, Switzerland. June 13, 2007.

"Trans-tympanic Membrane Delivery of Moxifloxacin into Chinchilla Middle Ear" Alcon Laboratories, Fort Worth TX. October 15, 2008.

"A Phase I Study to Investigate the Safety and Pharmacokinetics of Intrathecal Gabapentin Injection in Individuals with Chronic Pain". University of Poitiers, Poitiers, France, April 29, 2009.

TEACHING AT THE UNIVERSITY OF MINNESOTA

Undergraduate

1971 - 1972	Co-instructor in Phar 5680 "Pharmacokinetics"
1971 - 1975	Discussant in Pharm.D. Conferences
1972 - 1973	Participating instructor in Phar 5670
1972 - 1978	Discussion leader in Pharm.D. I conferences
1972 - 1985	Course director, Phar 5680 "Pharmacokinetics"
1975 - 1995	Course director, Phar 5685 "Clinical Pharmacokinetics"
1991 - 1999	Course director, Phar 5681 "Basic Pharmacokinetic Modeling"
1996 - 1998	Course director and Participating instructor, Phmc 5460 "Pharmacokinetics"
1998 - 2003	Course director and instructor, Phar 6216 "Pharmacokinetic Simulation and Data Analysis using SAAM "
1999 - 2004	Course director and Participating instructor, Phar 6163 "Pharmacokinetics"
1998 - 2004	Participating instructor in Phar 6164 "Biopharmaceutics"
2004 - present	Participating instructor, Phar 6163 "Pharmacokinetics"

Graduate

1972 - 1999	Course director in Phm 8420 "Modeling Approaches in Pharmacokinetics" participating instructor in Phm 8421, Phm 8425
1972 - 2005	Participating instructor in Phm 8100 (Seminar) and Phm 8101 (Pharmaceutics Readings)
1984 - 1999	Participating instructor in Phm 8425 "Advanced Topics in Pharmacokinetics"
1986 - 1999	Course co-director in Phm 8105 "Pharmacokinetics Research Seminar"
2000 - 2006	Course co-director in Phm 8150 "Pharmacokinetics Research Seminar"
2000 - 2006	Course Co-director and Participating instructor in Phm 8421 "Advanced Pharmacokinetics"
2004 - present	Participating instructor in Phm 8481 "Advanced Neuropharmaceutics"
2006 - present	Participating instructor in Phm 8421 "Advanced Pharmacokinetics"

TEACHING AT OTHER SITES

"An Introduction to Clinical Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, January 9-10, 2001.

"An Introduction to Clinical Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, March 29-30, 2001.

"An Introduction to Clinical Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, May 17-18, 2001.

"An Introduction to Clinical Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, May 17-18, 2001.

"An Introduction to Clinical Pharmacokinetics" Abbott Laboratories. Lake Bluff, IL, November 8-9, 2001.

"An Introduction to Pharmacokinetics" Abbott Laboratories. Lake Bluff, IL, March 14-15, 2002.

"An Introduction to Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, July 22-23, 2002.

"An Introduction to Pharmacokinetics" Abbott Laboratories. Parsippany, NJ, Aug 26-27, 2002.

"An Introduction to Pharmacokinetics" Bristol-Myers Squibb. Wilmington, DE, September 19-20, 2002.

"An Introduction to Pharmacokinetics" Schering Plough Corp. Kenilworth, NJ, December 19-20, 2002.

"An Introduction to Pharmacokinetics" Abbott Laboratories. Lake Bluff, IL, July 23-24, 2003.

"Short Course in Pharmacokinetics for Drug Discovery" Abbott Laboratories. Lake Bluff, IL. March 17, 2004.

"Preclinical Pharmacokinetics in Pharmaceutical Discovery." Bristol-Myers Squibb, Princeton, NJ. May 6-7, 2004.

"Introduction to Pharmacokinetics" Abbott Laboratories. Abbott Park, IL, July 27-28, 2004.

"Introduction to Clinical Pharmacokinetics" Millennium Pharmaceuticals, Inc. Cambridge, MA, December 2-3, 2004.

"Introduction to Clinical Pharmacokinetics" Gilead Sciences, Foster City, CA, December 8-9, 2005.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Boehringer-Ingelheim

Pharmaceuticals, Inc, USA. Ridgefield, CT, April 13-14, 2006

"An Introduction to Pharmacokinetics" Lundbeck Research, USA, Inc. Paramus, NJ, February 24, 2006.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Abbott Laboratories. Abbott Park, IL, June 4-5, 2007.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Theravance, Inc. South San Francisco, CA, August 20-21, 2007.

"Basic Pharmacokinetic Concepts" Co-instructor. US Patent and Trademark Office. Alexandria, VA, October 4, 2007.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Allergan, Inc. Irvine, CA. July 24-25, 2008.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Abbott Laboratories, Abbott Park, IL. August 19-20, 2008.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Gilead Sciences, Foster City, CA, October 9-10, 2008.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Genentech, South San Francisco, CA, July 23-24, 2009.

"Basic Pharmacokinetic Concepts for the Pharmaceutical Scientist" Co-instructor. Abbott Laboratories. Abbott Park, IL, July 30-31, 2009.

TEACHING (CONT'D)

Graduate Students Advised:

1978	Wargin, W.A.	Ph.D.
1978	El-Yazigi, A.	Ph.D.
1980	Mugure Pyron	M.S.
1981	Sue-Chi Wu	M.S.
1983	Hsuehling Su	M.S.
1984	Dale Yu	Ph.D.
1984	Walid Awni	Ph.D.
1985	Lillian Riad	M.S.
1985	Rose Eggerth	Ph.D.
1987	Hisham Abou-Auda	Ph.D.
1989	Mohsen Hedaya	Ph.D.
1989	Ajit K. Shah	Ph.D.
1989	Lillian Riad	Ph.D.
1991	Helen Chan	Ph.D.
1992	William Elmquist	Ph.D.
1992	Shekman Wong	Ph.D.
1994	Yanfeng Wang	Ph.D.
1994	Bimal Malhotra	Ph.D.
1996	Richard Brundage	Ph.D.
1997	Zheng Yang	Ph.D.
1998	Belinda Cheung	Ph.D.
2001	Yue Huang	Ph.D.
2001	Guanfa Gan	Ph.D.
2002	Joanna Peng	Ph.D.
2002	Tong Zhu	Ph.D.
2004	Ji Ping	Ph.D.
2004	Wei Liu	Ph.D.
2005	Yan Song	Ph.D.
2007	Nael Mostafa	Ph.D.
2007	Zhihong Li	Ph.D.

GRANTS, CONTRACTS, and OTHER SUPPORT

1972-73	University of Minnesota Graduate School
1973-74	University of Minnesota Media Production Fund
1975-78; 1978-80	NIH/NINCDS Comprehensive Epilepsy Program Contract (Principal Investigator, Project D-1)
1976; 1977	Medical Education and Research Foundation Grant (Co-investigator with John W. McBride, M.D.)
1976-78	FDA Contract to Study the Pharmacokinetics and Toxicology of Phenytoin Sodium Products in Clinical Patients
1980-81; 1981-83	Grant to Support Research Involving the Analysis of Cyclosporin A in Biological Fluids (Sandoz, Inc.)
1982-83; 1983-84	"Pharmacokinetics and Biopharmaceutic Studies of Cyclosporin A in Selected Animal and <i>In Vitro</i> Systems" (NIH; Principal Investigator; Co-investigator, R.P. Enever)
1984	Comparative Bioavailability of Sodium Phenytoin in Normal Volunteers (Zenith Labs)
1984	Relative Bioavailability of Carbamazepine in Chewable and Conventional Tablets (Ciba-Geigy)
1984	Transdermal Delivery of Propranolol (Medtronic)
11/84 - 1/85	Absorption and Metabolism of Carbamazepine in Normal Volunteers (Ciba-Geigy)
1/85 - 4/85	Transdermal Absorption of β -Blockers (Medtronic, Inc.)
11/85 - 4/86	Relative Bioavailability of Sustained Release Oral Dosage Forms of Carbamazepine (Ciba-Geigy)
1/86 - 6/86	Analysis of Analgesics in Receptor Media (Medtronic)
8/86 - 12/86	Bioequivalence of Carbamazepine Oral Dosage Forms (Ciba-Geigy)
1/86 - 12/88	Pharmacokinetics of Diltiazem in the Rabbit (Marion)
2/87 - 9/87	Bioequivalence of Carbamazepine Dosage Forms Demonstrating Varying Dissolution Rates (Ciba-Geigy)
6/1/87 - 10/15/87	Effect of Urine Flow on the Renal Clearance of Carbamazepine and its Metabolites in Humans (Ciba-Geigy)
1/88 - 6/88	Effect of Fasting on the Absorption of Diclofenac Sodium in Normal Human Volunteers (Ciba-Geigy)
4/1/89 - 3/31/92	Enhancing Brain Uptake of AZT by Transport Inhibition, (NINCDS / NIH)
7/1/89 - 6/30/90	Induction of Carbamazepine Metabolism as a Function of Dosing Rate in Normal Volunteers (Ciba-Geigy)
9/91 - 6/92	Brain Distribution of EAB-515 in the Rabbit (Sandoz, Ltd.)
11/91 - 5/92	<i>In Situ</i> Absorption from Rabbit Intestine (Lederle Laboratories)
3/92 - 8/92	Clinical Studies of the Absorption of an Oral Immunosuppressant (Apotex Laboratories)
11/92 - 10/93	Brain Distribution of an NMDA-Receptor Antagonist in the Rat (Sandoz, Ltd.)
10/92 - 5/93	Brain Uptake of a CNS-Active Agent (Warner-Lambert)
11/92 - 3/93	<i>In Situ</i> Absorption from Rabbit Intestine (Lederle Laboratories)
9/94 - 5/95	Population Pharmacokinetic Analysis of A General Anesthetic in Man (Abbott Laboratories)
7/94 - 5/95	Brain Uptake of a Cholinesterase Inhibitor and its Metabolites (Warner-Lambert)
10/94 - 9/95	Distribution of Antiviral Nucleosides into Rat Cortex (Bristol-Myers Squibb)
9/95 - 8/96	Bioanalytical Methods Development of Selected Drugs and Metabolites (MedTox)
1/96-9/96	Pharmacokinetic Analysis of IL-2 in the Pig (Chiron)
1/96 - 6/98	Analysis of Selected Macrolides by High-pressure Liquid Chromatography (TAP)

4/96-10/97	Brain Penetration of Fosphenytoin and Phenytoin in the Rabbit (Warner-Lambert)
4/96-9/96	Analysis and Brain Uptake of PPI-457 (Pharmaceutical Peptides, Inc)
7/97-3/98	Regional Intestinal Absorption of Anti-CMV agents (Bristol-Myers Squibb)
8/97-6/98	EM574 absorption in the rabbit in situ (TAP)
7/97-9/97	Pharmacokinetics of macrolides in Protocol EM-97-006 (TAP)
11/97-12/97	Drug Interaction Pharmacokinetic Analysis (McNeil)
8/97-3/98	Analysis and Pharmacokinetics of Macrolides in EM-97-008 (TAP)
10/97-12/97	Pharmacokinetics of Slow Release Agents in the CNS (Chiron)
1/98	LC/MS/MS Equipment Grant (TAP)
2/98-12/99	Analysis of Macrolides and Metabolites in EM-97-013 (TAP)
3/98-12/99	Chemical Stability of Selected Agents (Medtronic)
5/98	Validation of Analysis of Macrolides in Dog Plasma (TAP)
8/98	Validation of Analysis of Macrolides in Rabbit Plasma (TAP)
8/98	Stability of anticancer drugs in solution (Medtronic)
8/98	EM574 toxicokinetics in the dog (TAP)
12/98	EM574 toxicokinetics in the rabbit (TAP)
1/99	Pharmacodynamics of EM574 on LES Pressure (protocol 004) (TAP)
3/99	Effect of Time of Dosing on Absorption of EM574 (protocol 007)(TAP)
4/99	Effect of Gastric Emptying on the pharmacokinetics of EM574 and its metabolites (protocol 002) (TAP)
2/9	Stability of FUDR and heparin in solution (Medtronic)
2/99	Pharmacodynamics and PKs of EM574 and its metabolites during chronic dosing (protocol 029) (TAP)
3/00-8/01	Pharmacokinetics of CDTR and distribution to middle ear fluid (TAP)
8/00-6-01	Distribution of ketolides to middle ear fluid (Abbott)
10/01-09/03	Pharmacokinetics of Ketolides (Abbott)
12/01-11/03	Pharmacokinetics and Distribution of cefdinir (Abbott)
12/02-12-03	Effect of a P-Glycoprotein Inhibitor on the Middle Ear Distribution of Clarithromycin (Abbott)
12/02-6-04	Distribution a Cephalosporin into Middle Ear Fluid in Children with Otitis Media (H LaRoche)
12/02-12-04	Development and Testing of Formulations for Delivery of Antibiotics to the Middle Ear (Abbott)
5/03-4/05	A New Approach for the Therapy of Otitis Media (Abbott)
8/04-7/05	Distribution of Macrolide antibiotics to tissue sites (Pfizer)
5/05-11/05	Testing the Distribution of Amoxicillin into Middle Ear Fluid in the Chinchilla following Pulsatile Dose Administration (Advancis)
1/06-9-06	Distribution of Macrolide antibiotics to Pulmonary Tissue and Skeletal Muscle (Pfizer)
9/07-10-08	Transtympanic Membrane Delivery of an Antibiotic to the Middle Ear (Alcon)
11/07-12-08	Development of an Acute Otitis Media Middle Ear Microdialysis Model in the Chinchilla with Implanted Tympanostomy Tube (Alcon)

PATENT FILED

United States Patent. Number 7,220,431 "METHODS AND COMPOSITIONS FOR APPLYING PHARMACOLOGIC AGENTS TO THE EAR." UMN Docket # Z01159. RJ Sawchuk and BW Cheung. Issue Date: May 22, 2007. Filing Date: November 27, 2002: #06,306,517

PUBLICATIONS

BOOKS AND CHAPTERS

J. Blanchard, R.J. Sawchuk and B.B. Brodie, Editors. Principles and Perspectives in Drug Bioavailability. S. Karger, Basel, 1979.

J. Blanchard and R.J. Sawchuk, "Drug Bioavailability: An Overview" in Principles and Perspectives of Drug Bioavailability, J. Blanchard, R.J. Sawchuk and B.B. Brodie (Editors), S. Karger, Basel, 1979.

I.E. Leppik, J. Shope, R.J. Sawchuk, W.A. Hauser and B. Van Dyne, "Variability of Antiepileptic Drug Levels During Chronic Therapy" in Epileptology, M. Dam, L. Gram and K. Penry (Editors), Raven Press, NY, 1981.

R.J. Sawchuk, "Drug Absorption and Disposition in Burn Patients" in The Pharmacokinetic Basis of Drug Treatment, N. Massoud, L.Z. Benet, and J.G. Gambertoglio (Editors), Raven Press, NY, 1984.

"Use of Microdialysis in Drug Delivery Studies." Theme Issue. W.F. Elmquist and R.J. Sawchuk (Editors) *Advanced Drug Delivery Reviews* 45, Nos. 2-3 (2000).

R. J. Sawchuk and B.W.Y. Cheung, "Application of Microdialysis in Pharmacokinetic Studies." in Handbook of Microdialysis: Methods, Applications and Clinical Aspects, B.H.C. Westerink and T.I.F.H. Cremers (Editors), Academic Press, Amsterdam, 2007.

PROFESSIONAL PUBLICATIONS

R.J. Sawchuk, "The Plateau Principle in Drug Therapy. Part 1: The Principle and Its Application." *Minn. Pharmacist* 27(6): 19 (1973).

R.J. Sawchuk, "The Plateau Principle in Drug Therapy. Part 2: Factors Governing Plateau Levels During Chronic Drug Therapy." *Minn. Pharmacist* 27(7): 8 (1973).

M.C. Meyer, A.B. Straughn, L.J. Leeson, R.H. Levy and R.J. Sawchuk, "Meprobamate Bioavailability Monograph." *JAPhA* NS17, 173 (1977).

R.J. Sawchuk and T.S. Rector, "Burn-Induced Alterations in Drug Absorption and Disposition." *Minn. Pharmacist* 35: 6-9 (1981).

SCIENTIFIC PUBLICATIONS (NON-REFEREED)

I.E. Leppik, J. Cloyd and R.J. Sawchuk, "Coefficient of Variation as a Measure of Compliance" Letter. *Lancet*, October 14, 1978.

SCIENTIFIC PUBLICATIONS (REFEREED)

1. R.J. Sawchuk, J.M. Anderson and J.G. Nairn. "Stirring apparatus for the investigation of unstable strongly adsorbing chemicals." *J. Pharm. Sci.* 55: 1463 (1966).
2. R.J. Sawchuk and J.G. Nairn. "Rate studies on the binding of bilirubin by ion-exchange resins." *J. Pharm. Sci.* 57: 1896 (1968).
3. R.J. Sawchuk, J. Robayo and K.W. Miller. "The distribution of propranolol between blood and plasma in hypertensive patients." *Br. J. Clin. Pharmacol.* 1: 440 (1974).
4. R.J. Sawchuk and D.E. Zaske. "Pharmacokinetics of dosing regimens which utilize multiple intravenous infusions: gentamicin in burn patients." *J. Pharmacokin. Biopharm.* 4: 183 (1976).
5. D.E. Zaske, R.J. Sawchuk, D.N. Gerding and R.G. Strate. "Increased dosage requirements of gentamicin in burn patients." *J. Trauma* 16: (1976).
6. R.J. Sawchuk, D.E. Zaske, R.J. Cipolle, W.A. Wargin and R.G. Strate. "Kinetic model for gentamicin dosing with the use of individual patient parameters." *Clin. Pharmacol. Therap.* 21: 362 (1977).

7. J.C. Cloyd, D.E. Bosch and R.J. Sawchuk. "Concentration-time profile of phenytoin after admixture with small volumes of intravenous fluids." *Am. J. Hosp. Pharm.* 35: 45-48 (1978).
8. J.D. Wirtschafter, C.R. Volk and R.J. Sawchuk. "Trans-aqueous diffusion of acetylcholine to denervated iris sphincter muscle: A hypothetical mechanism for the tonic pupil syndrome (Adie's Syndrome)." *Annals of Neurology* 4: 1-5 (1978).
9. D.E. Zaske, R.J. Sawchuk and R.G. Strate. "The necessity of increased doses of amikacin in burn patients." *Surgery* 84: 603-608 (1978).
10. S.M. Ehlers, D.E. Zaske and R.J. Sawchuk. "Massive theophylline overdose: rapid removal by charcoal memoperfusion." *JAMA* 240: 474 (1978).
11. I.E. Leppik, V. Ramani, R.J. Sawchuk and R.J. Gumnit. "Increased clearance of phenytoin during mononucleosis." *NEJM* 300: (1979).
12. H.G. McCoy, R.J. Cipolle, S.M. Ehlers, R.J. Sawchuk and D.E. Zaske. "Severe methanol poisoning: application of a pharmacokinetic model for ethanol therapy and hemodialysis." *Am. J. Med.* 67: 804-807 (1979).
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ABSTRACTS

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23. R.J. Sawchuk, I.E. Leppik and R.E. Cranford. "Pharmacokinetics of large dose intravenous phenytoin therapy." 11th World Congress of Neurology Meeting, Amsterdam, The Netherlands, September 11-16, 1977.
24. J.D. Wirtschafter, C.R. Volk and R.J. Sawchuk. "Trans-aqueous diffusion of acetylcholine to denervated iris sphincter muscle: a hypothetical mechanism for the tonic pupil syndrome (Adie's Syndrome)." Association of Research in Vision and Ophthalmology, Sarasota, FL, May 1978.
25. W.A. Wargin, M.L. Rylander, R.J. Sawchuk and J.W. McBride. "The pharmacokinetics of orally administered propranolol in hypertensive patients." APhA Academy of Pharmaceutical Sciences, Phoenix, AZ, 1977.
26. R.J. Sawchuk, J.C. Cloyd, I.E. Leppik, S.M. Pepin and R.J. Gumnit. "Steady-state analysis of phenytoin kinetics applied to dose adjustments in epileptic patients." APhA Academy of Pharmaceutical Sciences, Phoenix, AZ, 1977.
27. R.J. Cipolle, R.G. Strate, D.E. Zaske and R.J. Sawchuk. "Amikacin pharmacokinetics: effect of age on elimination." Inter-Science Conference on Antimicrobial Agents and Chemotherapy, New York, 1977.
28. D.E. Zaske, K.B. Crossley, R.J. Sawchuk, D.L. Uden and K.E. Mead. "Vancomycin kinetics: excessive steady-state serum levels resulting from recommended dosages." Interscience Conference on Antimicrobial Agents and Chemotherapy, New York, 1977.
29. D.E. Zaske, R.J. Sawchuk and R.G. Strate. "Increased dosage requirements of amikacin in burn patients." American Burn Assoc., 9th Annual Meeting, Anaheim, CA, April 1977.
30. S.E. Chen, R.J. Sawchuk and E.J. Staba. "Pharmacokinetics of ginseng compounds." 2nd International Ginseng Symposium, Seoul, Korea, 1978.
31. J.C. Cloyd, R.J. Sawchuk, I.E. Leppik and S.M. Pepin. "The direct linear plot: use in estimating Michaelis-Menten parameters and individualizing phenytoin dosage regimens in epileptic patients." Epilepsy International Symposium, Vancouver, Canada, September 10-14, 1978.
32. I.E. Leppik, V. Ramani, R.J. Sawchuk and R.J. Gumnit. "Seizures and altered phenytoin metabolism in mononucleosis." Epilepsy International Symposium, Vancouver, Canada, September 10-14, 1978.
33. I.E. Leppik, J. Cloyd, R. Sawchuk and D. Fryd. "Coefficient of variation as an objective measure of compliance." Epilepsy International Symposium, Vancouver, Canada, September 10-14, 1978.
34. E. Ramsay, I. Leppik, R. Strauss, B.J. Wilder and R.J. Sawchuk. "Plasma clearance and volume of distribution of phenytoin during pregnancy." Epilepsy International Symposium, Vancouver, Canada, September 10-14, 1978.
35. R.L. Kriel, J.C. Cloyd, K.H. Green, R.J. Sawchuk, L.A. Lockman and R.M. Eggerth. "The pharmacokinetics of valproic acid in children." Child Neurology Society, Hanover, NH, September 1979.
36. P. Subronto, C.M. Stowe and R. Sawchuk. "Pharmacokinetics of aminophylline in dairy cattle." Sixtieth Conference of Research Workers in Animal Diseases, Chicago, IL, November 26-27, 1979.
37. I.E. Leppik, J. Shope, R.J. Sawchuk, W.A. Hauser and B. Van Dyne. "Variability of antiepileptic drug levels during chronic therapy." American Academy of Neurology, New Orleans, April 28-May 3, 1980.
38. R.M. Eggerth, J.C. Cloyd, R.L. Kriel and R.J. Sawchuk. "Valproic acid pharmacokinetics in epileptic children." 12th Annual Graduate Student Pharmaceutics Research Meeting, Columbus, OH, June 25, 1980.

39. R. Sylvester, R.J. Sawchuk and R. Perri. "Decreased phenytoin absorption with cis-platinum, vinblastine and bleomycin therapy." American Society of Clinical Oncology Abstracts, 1981.
40. I.E. Leppik, J. Fischer, R. Kriel and R.J. Sawchuk. "Altered phenytoin clearance during febrile illness." American Academy of Neurology, Toronto, Ontario, April 1981.
41. W.M. Awni and R.J. Sawchuk. "Preliminary pharmacokinetic studies of cyclosporin A in animals." Fourteenth Annual Graduate Student Pharmaceutics Research Meeting, Morgantown, WV, June 1982.
42. R.M. Ferguson, R. Fidelus-Gort, J.J. Rynasiewicz, K. Gajl-Peczalska, and R.J. Sawchuk. "The immunosuppressive action of cyclosporin A (CSA) in man." Annual Meeting of the American Society of Transplant Surgery, London, August 1982.
43. J.H. Fischer, I.E. Leppik, R.L. Kriel, J.D. MacDonald and R.J. Sawchuk. "Clinical significance of absorption differences between carbamazepine tablet and suspension formulations." Fourteenth Epilepsy International Symposium, London, August 1982.
44. L.E. Riad and R.J. Sawchuk. "The pharmacokinetics of carbamazepine in the rabbit." The Second University of Minnesota/3M Research Poster Session, Minneapolis, MN, May 1984.
45. W.M. Awni and R.J. Sawchuk. "Cyclosporine pharmacokinetics in the rabbit." The Second University of Minnesota/3M Research Poster Session, Minneapolis, MN, May 1984.
46. W.F. Elmquist, D.K. Yu and R.J. Sawchuk. "Propylene glycol pharmacokinetics." The Second University of Minnesota/3M Research Poster Session, Minneapolis, MN, May 1984.
47. C. Fletcher, R. Sawchuk, B. Chinnock, C. Vicary, L.E. Kirk, P. De Miranda, and H.H. Balfour, Jr. "Human pharmacokinetics of 9-[2-Hydroxy-1-(hydroxymethyl)ethoxymethyl]guanine." Interscience Conference on Antimicrobial Agents and Chemotherapy, Minneapolis, MN, September 28, 1985.
48. R.J. Sawchuk, L. Riad and K.K.H. Chan. "Simultaneous first- and zero-order absorption of carbamazepine (Tegretol) tablets in humans." 16th Epilepsy International Congress, Hamburg, West Germany, September 6, 1985.
49. W.M. Awni and R.J. Sawchuk. "Differential absorption of cyclosporine from two consecutive anatomic regions of the small intestine using an *in situ* perfusion model." Academy of Pharmaceutical Sciences Meeting, Minneapolis, MN, October 20, 1985.
50. H.A. Abou-Auda and R.J. Sawchuk. "Absorption and metabolism of salicylate esters in rabbit small intestine." Academy of Pharmaceutical Sciences Meeting, Minneapolis, MN, October 18-24, 1985.
51. L.E. Riad, K.K.H. Chan and R.J. Sawchuk. "Contribution of epoxide pathway to induction of carbamazepine metabolism during multiple dosing in humans." Academy of Pharmaceutical Sciences meeting, Minneapolis, MN, October 18-24, 1985.
52. L.E. Riad and R.J. Sawchuk. "Contribution of epoxide formation to the auto-induction of carbamazepine in the rabbit." Academy of Pharmaceutical Sciences Meeting, Minneapolis, MN, October 18-24, 1985.
53. R.M. Eggerth and R.J. Sawchuk. "Investigation of the dose-dependent elimination of phenytoin in the rabbit." Academy of Pharmaceutical Sciences Meeting, Minneapolis, MN, October 18-24, 1985.
54. L.E. Riad and R.J. Sawchuk. "Determination of the relative formation of elimination clearance of carbamazepine metabolites in humans: a comparison of traditional and pooled sample analysis." Third European Congress of Biopharmaceutics and Pharmacokinetics, Freiburg, Germany, April 21, 1987.

55. W.F. Elmquist, D.K. Yu, G. Solis and R.J. Sawchuk. "Physiological modelling of the dependence of renal clearance on urine flow: propylene glycol pharmacokinetics in man." Third European Congress of Biopharmaceutics and Pharmacokinetics, Freiburg, Germany, April 21, 1987.
56. A.K. Shah, K.D. Lake and R.J. Sawchuk. "Blood levels of cyclosporine A and its metabolites in rabbit and man." American Association of Pharmaceutical Scientists Annual Meeting, Boston, MA, June 1987.
57. K.D. Lake, Pharm.D.*, A.K. Shah, Ph.D., R. Emery, M.D. and R.J. Sawchuk, Ph.D. "Measurement of cyclosporine metabolites in the blood of heart transplant recipients." American College of Clinical Pharmacy Annual Meeting, May 1987.
58. A.K. Shah, A. Gratwohl and R.J. Sawchuk. "Subcutaneous absorption of cyclosporine in rabbits." 2nd International Congress on Cyclosporine, Washington, DC, November 4-7, 1987.
59. M.A. Hedaya and R.J. Sawchuk. "The effect of probenecid on the renal excretion of azidothymidine (AZT) in the rabbit." Third Annual Meeting, AAPS, Orlando, FL, October 29-November 4, 1988.
60. W.F. Elmquist, K.K.H. Chan, V.A. John and R.J. Sawchuk. "Transsynovial distribution of diclofenac." Third Annual Meeting, AAPS, Orlando, FL, October 29-November 4, 1988.
61. L.E. Riad and R.J. Sawchuk. "Administration of site-related differences in carbamazepine disposition in the rabbit." Third Annual Meeting, AAPS, Orlando, FL, October 29-November 4, 1988.
62. A.K. Shah and R.J. Sawchuk. "Effect of urine flow on the renal clearance of cyclosporine in rabbit." Third Annual Meeting, AAPS, Orlando, FL, October 29-November 4, 1988.
63. W.F. Elmquist, L.E. Riad, I.E. Leppik and R.J. Sawchuk. "Physiological modelling of the dependence of renal clearance on urine flow: carbamazepine and two metabolites in man." Third Annual Meeting, AAPS, Orlando, FL, October 29-November 4, 1988.
64. M.A. Hedaya and R.J. Sawchuk. "Pharmacokinetic analysis of the enhanced distribution of zidovudine into rabbit cerebrospinal fluid caused by probenecid." V. International Conference on AIDS, Montreal, June 4-9, 1989.
65. Y. Wang, M.A. Hedaya and R.J. Sawchuk. "Effect of mannitol IV infusion on distribution of zidovudine between plasma and cerebrospinal fluid in rabbits." V. International Conference on AIDS, Montreal, June 4-9, 1989.
66. M.A. Hedaya, W.F. Elmquist and R.J. Sawchuk. University of Minnesota, Minneapolis, Minnesota, USA. "Probenecid inhibits the metabolic and renal clearances of zidovudine in human volunteers." V. International Conference on AIDS, Montreal, June 4-9, 1989.
67. M.A. Hedaya and R.J. Sawchuk. "A sensitive and specific HPLC method for the determination of zidovudine and zidovudine glucuronide in plasma and urine." V. International Conference on AIDS, Montreal, June 4-9, 1989.
68. M.A. Hedaya and R.J. Sawchuk. "A simple and specific liquid-chromatographic method for determination of ganciclovir (DHPG) in plasma and urine." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
69. L.E. Riad and R.J. Sawchuk. "Intestinal absorption of carbamazepine in the rabbit." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.

70. A.J. Shah and R.J. Sawchuk. "The effect of altering blood lipids on the pharmacokinetics of cyclosporine in the rabbit." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
71. M.A. Hedaya, W.F. Elmquist and R.J. Sawchuk. "Mechanism of zidovudine (AZT) dose-sparing by probenecid in humans." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
72. W.F. Elmquist and R.J. Sawchuk. "Tissue mean transit time determination from steady-state partition coefficients and tissue/plasma concentration ratios in the post-distributive phase." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
73. L.E. Riad and R.J. Sawchuk. "Relative bioavailability and effects of food on plasma levels of diclofenac sodium following a single oral dose of Voltaren 100-mg SR tablet." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
74. O.H. Chan and R.J. Sawchuk. "Intestinal absorption of diltiazem in the rabbit." Fourth Annual Meeting, AAPS, Atlanta, GA, October 21-26, 1989.
75. R.J. Sawchuk. "Pharmacokinetic and analytical considerations in monitoring zidovudine (AZT) levels in children with AIDS." The Fourth International Congress on Pediatric Laboratory Medicine, Washington, DC, August 23, 1989.
76. K.D. Lake, A.K. Shah, R.W. Emery, D.R. Holder and R.J. Sawchuk. "The effect of urine flow rate on the renal clearance of cyclosporine in heart transplant recipients." International Society for Heart Transplantation, Tenth Annual Meeting, Fort Lauderdale, FL, April 4-6, 1990.
77. R.J. Sawchuk. "Effect of temperature and medium of analysis on CsA concentration." Canadian Consensus Meeting on Cyclosporine Monitoring, Minaki Lodge, Ontario, May 10-13, 1990.
78. H. Das, S.W. Wong, K. Chan, R.J. Sawchuk and R.L. Oberle. "Pharmacokinetics and metabolism of diclofenac sodium (Voltaren) after IV and oral administration to Yucatan miniswine." Eastern Regional AAPS meeting, New Brunswick, NJ, June 3-5, 1990.
79. S.M. Wong and R.J. Sawchuk. "Interaction of zidovudine and probenecid at steady state." NATO Advanced Study Institute Symposium "New Trends in Pharmacokinetics." Erice, Sicily, September 4-15, 1990.
80. W.F. Elmquist and R.J. Sawchuk. "Tissue mean transit time determination from steady-state partition coefficients and tissue/plasma concentration ratios in the postdistributive phase." NATO Advanced Study Institute Symposium "New Trends in Pharmacokinetics," Erice, Sicily, September 4-15, 1990.
81. A.K. Shah, R.J. Sawchuk, A. Gratwohl and R.C. Brundage. "Modeling subcutaneous absorption of cyclosporine A in rabbits." NATO Advanced Study Institute Symposium "New Trends in Pharmacokinetics," Erice, Sicily, September 4-15, 1990.
82. L.E. Riad, K.K.H. Chan and R.J. Sawchuk. "Effects of dosing rate on carbamazepine enzymatic induction in normal volunteers." NATO Advanced Study Institute Symposium "New Trends in Pharmacokinetics," Erice, Sicily, September 4-15, 1990.
83. W.F. Elmquist, L.E. Riad, I.E. Leppik and R.J. Sawchuk. "The relationship between carbamazepine urine and plasma concentrations: implications for therapeutic drug monitoring." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
84. S.M. Wong, L.E. Riad, P. Degen, V. John, K. Chan and R.J. Sawchuk. "Comparison of plasma concentrations of diclofenac sodium and its metabolites during single and multiple dosing of Voltaren SR tablet in humans." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.

85. O.H. Chan and R.J. Sawchuk. "Saturable first-pass elimination of diltiazem during intestinal absorption in the rabbit." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
86. L.E. Riad and R.J. Sawchuk. "Carbamazepine enzymatic induction: extent and effects of dosing rate in normal volunteers." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
87. Y.-F. Wang, M.A. Hedaya and R.J. Sawchuk. "Comparative absorption and disposition pharmacokinetics of AZT and AZddU in rabbits." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
88. S.L. Wong and R.J. Sawchuk. "Investigation of distribution of zidovudine into the brain by microdialysis." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
89. S.L. Wong and R.J. Sawchuk. "Interaction of zidovudine and probenecid at steady state." AAPS Fifth Annual Meeting, Las Vegas, NV, November 4-8, 1990.
90. S.L. Wong, Y.-F. Wang and R.J. Sawchuk. "Brain/plasma distribution kinetics of zidovudine (AZT) in the rabbit using microdialysis." 1991 Symposium on Microdialysis and Allied Analytical Techniques, Indianapolis, IN, May 16-17, 1991.
91. K. Van Belle, S.L. Wong, Y.-F. Wang and R.J. Sawchuk. "Comparative delivery and distribution kinetics of zidovudine (AZT) and AZddU into the rabbit brain by microdialysis." 1991 Symposium on Microdialysis and Allied Analytical Techniques, Indianapolis, IN, May 16-17, 1991.
92. Y.-F. Wang, S.L. Wong and R.J. Sawchuk. "*In vitro* and *in vivo* calibration of microdialysis probes using retrodialysis." 1991 Symposium on Microdialysis and Allied Analytical Techniques, Indianapolis, IN, May 16-17, 1991.
93. B.W. Cheung, L.E. Riad and R.J. Sawchuk. "Comparative uptake of selected anticonvulsant drugs into rabbit brain." 1991 Symposium on Microdialysis and Allied Analytical Techniques, Indianapolis, IN May 16-17, 1991.
94. L.E. Riad, K.K. Chan, J.A. Maloney and R.J. Sawchuk. "Reversibility of carbamazepine autoinduction upon dose termination in normal volunteers." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.
95. S.L. Wong, M.A. Hedaya and R.J. Sawchuk. "Modeling the competitive inhibition of renal and nonrenal clearance of zidovudine by probenecid." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.
96. K. Van Belle, S.L. Wong, Y.-F. Wang and R.J. Sawchuk. "Comparison of pharmacokinetics and CNS distribution of coadministered AZT and AZddU by microdialysis." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.
97. Y.-F. Wang, S.L. Wong and R.J. Sawchuk. "*In vitro* and *in vivo* calibration of microdialysis probes using retrodialysis: application to the study of brain/plasma distribution of zidovudine." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.
98. W.F. Elmquist, L.E. Riad, I.E. Leppik and R.J. Sawchuk. "The relationship between urine and plasma concentrations of carbamazepine and phenytoin in epileptic patients on chronic therapy." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.
99. S.L. Wong, Y.-F. Wang, and R.J. Sawchuk. "Effect of dose on distribution of zidovudine (AZT) into rabbit brain using microdialysis with *in vivo* calibration." AAPS Sixth Annual Meeting, Washington, DC, November 17-21, 1991.

100. W.F. Elmquist, I.E. Leppik and R.J. Sawchuk. "Physiological modeling of the dependence of renal clearance on urine flow II: phenytoin and HPPH in humans." American Association of Pharmaceutical Scientists Annual Meeting, Washington, DC, November 17-21, 1991.
101. R.J. Sawchuk. "Study of zidovudine distribution into the CNS utilizing microdialysis." 25th Annual Higuchi Research Seminar, Lake of the Ozarks, MO, March 8-11, 1992.
102. Y.F. Wang and R.J. Sawchuk. "Microdialysis studies of brain/plasma distribution of AZT during intraventricular and intravenous infusion." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
103. S.L. Wong, K. Van Belle, and R.J. Sawchuk. "A microdialysis study of probenecid's effect on the transport kinetics of zidovudine in rabbit brain." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
104. S.L. Wong, and R.J. Sawchuk. "Pharmacokinetic interaction of zidovudine and salicylic acid during continuous infusion." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
105. S.L. Wong, and R.J. Sawchuk. "Effect of salicylic acid on the distribution of zidovudine between plasma and cerebrospinal fluid." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
106. R.C. Brundage, K.K.H. Chan, and R.J. Sawchuk. "Population pharmacokinetic modeling of nicotine following transdermal drug administration." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
107. R.C. Brundage, K.K.H. Chan, and R.J. Sawchuk. "Population pharmacokinetics of diclofenac potassium using routinely collected experimental data." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
108. W.F. Elmquist and R.J. Sawchuk. "Simulation of the effect that the time delay in sampling from the bladder has on urine concentrations: implications for therapeutic drug monitoring using urine specimens." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
109. J.P. Zhong, Y.F. Wang and R.J. Sawchuk. "Absorption of three antiviral nucleosides from different anatomic regions of rabbit intestine." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
110. Y.F. Wang, S.L. Wong, and R.J. Sawchuk. "On-line microdialysis calibration using retrodialysis and the zero-net flux method: application to a study of the distribution of AZT to rabbit CSF and thalamus." AAPS Seventh Annual Meeting, San Antonio, TX, November 15-19, 1992.
111. R.J. Sawchuk. "Comparative distribution of AZT into brain tissue extracellular fluid during intravenous and intraventricular infusion using microdialysis." 26th Annual Higuchi Research Seminar, Lake of the Ozarks, MO, March 14-17, 1993.
112. Y. Wang and R.J. Sawchuk, "Comparison of renal clearance of AZdU following IV bolus and constant-rate Infusion." 8th Annual Meeting, American Association of Pharmaceutical Scientists, Orlando, FL, November 14-18, 1993.
113. Y. Wang and R.J. Sawchuk. "Assessment of oral absorption of AZT and AZdU in the rabbit using deconvolution." 8th Annual Meeting, American Association of Pharmaceutical Scientists, Orlando, FL, November 14-18, 1993.

114. Y. Wang, Y. Wei and R.J. Sawchuk. "Microdialysis studies of carrier-mediated transport of AZT from brain to plasma during intracerebroventricular infusion." 8th Annual Meeting, American Association of Pharmaceutical Scientists, Orlando, FL, November 14-18, 1993.
115. B.K. Malhotra, M. Lemaire, and R.J. Sawchuk. "Investigation of the CNS distribution of EAB 515 in freely moving rats by microdialysis." 8th Annual Meeting, American Association of Pharmaceutical Scientists, Orlando, FL, November 14-18, 1993.
116. A.K. Shah, R.C. Brundage, K.D. Lake and R.J. Sawchuk. "Estimation of plasma free fraction (fu) of cyclosporine (CYA) in the rabbit and heart transplant (HT) patients by NONMEM using a physiological model of renal clearance (CLr)." 8th Annual Meeting, American Association of Pharmaceutical Scientists, Orlando, FL, November 14-18, 1993.
117. B.K. Malhotra, R.C. Brundage, M. Lemaire, and R.J. Sawchuk. "Modeling of the CNS distribution of EAB 515 following IV and ICV administration." 5th Symposium: Frontiers of Pharmacokinetics and Pharmacodynamics, Baltimore, MD, April 18-20, 1994.
118. R.C. Brundage, B.K. Malhotra, J.A. Maloney and R.J. Sawchuk. "Brain distribution of tacrine and the 1-hydroxy and 2-hydroxy tacrine metabolites determined by microdialysis in freely-moving rats." 5th Symposium: Frontiers of Pharmacokinetics and Pharmacodynamics, Baltimore, MD, April 18-20, 1994.
119. Y. Wang and R.J. Sawchuk. "CNS Distribution of inulin-[¹⁴C]-carboxylic acid in rabbits." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
120. B.K. Malhotra, R.C. Brundage and R.J. Sawchuk. "Simultaneous microdialysis of portal and jugular blood following IV bolus and oral lavage in freely-moving rats." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
121. R.C. Brundage, B.K. Malhotra, J.A. Maloney and R.J. Sawchuk. "Brain distribution of tacrine and its 1- and 2-hydroxylated metabolites determined by microdialysis in freely-moving rats." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
122. B.K. Malhotra, R.C. Brundage, Y. Wang and R.J. Sawchuk. "Dialysis membrane-limited and aqueous boundary layer-limited *in vitro* microdialysis recovery." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
123. B.W.Y. Cheung, Y. Wang and R.J. Sawchuk. "Preliminary studies of effects of hydroxy-propyl-beta-cyclodextrin on carbamazepine distribution into rabbit brain." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
124. R.J. Sawchuk, J.A. Maloney, L.L. Cartier, R.J. Rackley, K.K.H. Chan and H.S.H. Lau. "Analysis of diclofenac and four of its metabolites in human urine by HPLC." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
125. R.C. Brundage, M. Lemaire and R.J. Sawchuk. "Modeling of the CNS distribution of EAB 515 following IV and ICV administration." 9th Annual Meeting, American Association of Pharmaceutical Scientists, San Diego, CA, November 6-10, 1994.
126. B.K. Malhotra, M. Lemaire, J.F. Brouillard and R.J. Sawchuk. "High-performance liquid chromatographic (HPLC) analysis of EAB 515 in brain and blood microdialysate (on-line) and in plasma ultrafiltrate of freely-moving rats." 10th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, November 5-9, 1995.

127. R.J. Sawchuk, R.C. Brundage, E.D. Kharasch and M.D. Karol. "Physiological-based pharmacokinetic (PBPK) modeling of sevoflurane, a volatile anesthetic." 10th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, November 5-9, 1995.
128. R.C. Brundage, S. Thomas Forgue and R.J. Sawchuk. "Comparative distribution of a series of aminoacridines of varying polarities into rat cortex using microdialysis." 10th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, November 5-9, 1995.
129. Z. Yang, R.C. Brundage, L.L. Cartier, J.A. Maloney and R.J. Sawchuk. "Development of a microdialysis method to study brain distribution of stavudine (d4t) in freely-moving rats." 10th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, November 5-9, 1995.
130. B.K. Malhotra, R.C. Brundage and R.J. Sawchuk. "Estimation of presystemic disposition of drugs based upon combination of area ratios and deconvolution." 10th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, November 5-9, 1995.
131. M.A. Osman, R. J. Sawchuk, and M.K. Youssef. "In Situ Absorption of the Antiviral drug, stavudine, from the rabbit intestine." European Symposium on Formulation of Poorly Available Drugs for Oral Administration, Paris, February 5- 6, 1996.
132. M.A. Osman, R.J. Sawchuk, and M.K. Youssef. "Ganciclovir (DHPG), an antiviral nucleoside that exhibits high absorptive clearance in the rabbit colon *in situ*." European Symposium on Formulation of Poorly-available Drugs for Oral Administration, Paris, February 5- 6, 1996.
133. B. K. Malhotra, M. Lemaire, J.F. Brouillard, and R.J. Sawchuk. "High-performance liquid chromatographic (HPLC) analysis of EAB 515 in brain and blood microdialysate (on-line) and in plasma ultrafiltrate of freely-moving rats." 11th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, October 29-31, 1996.
134. R.J. Sawchuk, R.C. Brundage, E.D. Kharasch, and M.D. Karol. "Physiologically-based pharmacokinetic (PBPK) modeling of sevoflurane, a volatile anesthetic." 11th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, October 29-31, 1996.
135. R.C. Brundage, S.T. Forgue, and R.J. Sawchuk. "Comparative distribution of a series of aminoacridines of varying polarities into rat cortex using microdialysis." 11th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, October 29-31, 1996.
136. Z. Yang, R.C. Brundage, L.L. Cartier, J.A. Maloney, and R.J. Sawchuk. "Development of a microdialysis method to study brain distribution of stavudine (d4T) in freely-moving rats." 11th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, October 29-31, 1996.
137. B.K. Malhotra, R. C. Brundage, and R. J. Sawchuk. "Estimation of presystemic disposition of drugs based upon combination of area ratios and deconvolution." 11th Annual Meeting, American Association of Pharmaceutical Scientists, Miami Beach, FL, October 29-31, 1996.
138. Z. Yang and R.J. Sawchuk. "A modified solvent drag model and its application in studying intestinal absorption of polar drugs." 12th Annual Meeting, American Association of Pharmaceutical Scientists, Boston, MA, November 2-6, 1997.
139. Z. Yang and R.J. Sawchuk. "Estimating the intestinal absorptive clearance of drugs: consideration of water absorption during in situ single-pass perfusion studies." 12th Annual Meeting, American Association of Pharmaceutical Scientists, Boston, MA, November 2-6, 1997.

140. Z. Yang, P. Manitspitkul, F.P. LaCreta, C.K. Knupp, R.H. Barbhaya, and R.J. Sawchuk. "In situ studies of the regional absorption of lobucavir and ganciclovir from rabbit intestine." American Association of Pharmaceutical Scientists Annual Meeting, San Francisco, CA, November 15-19, 1998.
141. Z. Yang, Y. Huang, G. Gan, and R.J. Sawchuk. "Microdialysis evaluation of the brain distribution of stavudine following intranasal administration." American Association of Pharmaceutical Scientists Annual Meeting, San Francisco, CA, November 15-19, 1998.
142. Z. Yuan, P. Ji, S. Giebink, and R.J. Sawchuk. "Antibiotic Middle Ear Pharmacokinetics by Microdialysis." American Association of Pharmaceutical Scientists Annual Meeting, San Francisco, CA, November 15-19, 1998.
143. R.J. Sawchuk, P. Ji, Y. Huang. "Distribution of Amoxicillin to Middle Ear Fluid Using Microdialysis Sampling." Higuchi Research Seminar, Lake of the Ozarks, MO, March 14-17, 1999.
144. Y. Huang, and R.J. Sawchuk. "Antibiotic Pharmacokinetics in Chinchilla Middle Ear using Microdialysis." Association of Pharmaceutical Scientists Midwest Regional Meeting, Chicago, IL, May 17, 1999
145. R.J. Sawchuk, P. Ji, Y. Huang, and S. Giebink. "Kinetics of Transport of Antibiotics to Middle Ear Fluid Using Microdialysis Sampling." Seventh International Symposium on Recent Advances in Otitis Media, Fort Lauderdale, FL, June 1-5, 1999.
146. G. Gan, and R.J. Sawchuk. "Intestinal Absorption and Pre-Systemic First Pass Elimination of Minocycline and Propranolol in Rabbits" *American Association of Pharmaceutical Scientists Annual Meeting*, New Orleans, LA, November 14-18, 1999.
147. B.W.Y. Cheung, L.L. Cartier, H. Q. Russlie, and R.J. Sawchuk. "Using Sample Pooling Methods in the Determination of AUC and AUMC in Pharmacokinetic Studies" *American Association of Pharmaceutical Scientists Annual Meeting*, New Orleans, LA, November 14-18, 1999.
148. Y. Huang, L.L. Cartier, and R.J. Sawchuk. "Analysis of Clarithromycin by Chemiluminescence: In Vitro/InVivo Microdialysis Studies" *American Association of Pharmaceutical Scientists Annual Meeting*, New Orleans, LA, November 14-18, 1999.
149. P. Guo, P. Ji, B.W.Y. Cheung, J.B. McCarthy, and R.J. Sawchuk. "Fibronectin Peptide (FN C/H V-Y) Assay and Stability in Human and Rat Plasma" *American Association of Pharmaceutical Scientists Annual Meeting*, New Orleans, LA, November 14-18, 1999.
150. R. J. Sawchuk, B. W. Y. Cheung, L. L. Cartier, H. Q. Russlie, T. Zhu, Y. Huang, G. S. Giebink, D. Mulford and M. Mayer. "Kinetics of Cefditoren Distribution to Middle Ear Fluid in The Unanesthetized Chinchilla" *40th Interscience Conference on Antimicrobial Agents and Chemotherapy*. Toronto, ON, September 17-20, 2000
151. G.S. Giebink, T.M. Sheehy, M. Quartey, R.J. Sawchuk, M. Mayer Cefditoren Pharmacodynamics for Streptococcus Pneumoniae (Pnc) Acute Otitis Media (AOM) in the Chinchilla Model" *40th Interscience Conference on Antimicrobial Agents and Chemotherapy*. Toronto, ON, September 17-20, 2000.
152. Y. Huang, R. J. Sawchuk. "Studies of the Middle Ear Distribution Kinetics of Amoxicillin in the Awake Chinchilla Using Microdialysis". *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
153. J.Z. Peng, R.C. Brundage, and R.J. Sawchuk. "Study of Presystemic Elimination of 4-mono-methylamino-antipyrine (MAAP) after Consecutive Doses in Freely Moving Rats Using On-line

- Microdialysis". *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
154. T. Zhu, Y. Huang, L.L. Cartier, R. J. Sawchuk "In Vitro Microdialysis and Protein Binding Studies of Cefditoren" *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
155. G. Gan, L. L. Cartier, Y. Huang, Z. Yang, R. J. Sawchuk "Intestinal Absorption and Presystemic Elimination of the Prokinetic Agent, EM574, in Rabbits" *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
156. L. C. Musib, J. C. Cloyd, A.K. Birnbaum, T. J. Hietpas, R. J. Sawchuk, I. E. Leppik, T. R. Browne, S. F. Holloway, G. S. Holden, J. O. Rarig. "Preliminary Report on Phenytoin Bioavailability in the Elderly Using an Intravenous Stable-Labeled Isotope". *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
157. Z. Yang, L. M. Zadjura, C. J. D'Arienzo, D. B. Wang-Iverson, R. J. Sawchuk "Use of Sample Pooling in Drug Discovery to Screen for Pharmacokinetic Properties of Compounds in Rats" *American Association of Pharmaceutical Scientists Annual Meeting*, Indianapolis, IN, October 29- November 2, 2000.
158. R.J. Sawchuk, Y. Huang, P. Ji, M. Quartey, G.S. Giebink. "Influx/Efflux Penetration Clearance of Amoxicillin between Plasma and Middle Ear Fluid in Freely Moving Chinchillas using Microdialysis" *4th Extraordinary International Symposium on Recent Advances in Otitis Media*, Sendai, Japan, April 16-20, 2001.
159. T. Zhu, B. W. Cheung, L.L. Cartier, G. S. Giebink, D.J. Mulford, M.D. Mayer, R.J. Sawchuk. " Study of Cefditoren Distribution Kinetics to Middle Ear Fluid in Freely-moving Chinchillas Using Microdialysis." *American Association of Pharmaceutical Scientists Annual Meeting*, Denver, CO, October 21-25, 2001.
160. W. Liu, B.W. Cheung, L.L. Cartier, T. Zhu, M.M. Paris, R.J. Sawchuk. " In vitro/In vivo Microdialysis and Protein Binding Studies of the ketolide antibiotic, ABT-773." *American Association of Pharmaceutical Scientists Annual Meeting*, Denver, CO, October 21-25, 2001.
161. Y. Huang, R.J. Sawchuk. " Estimation of Amoxicillin Influx and Efflux Clearance between Plasma and Middle Ear Fluid Following Simultaneous Systemic and Local Ear Doses in Awake Chinchilla Using Microdialysis." *American Association of Pharmaceutical Scientists Annual Meeting*, Denver, CO, October 21-25, 2001.
162. J.Z. Peng, R.C. Brundage, R.J. Sawchuk. "The Influence of Drug Pre-exposure on First-pass Metabolism of Tacrine in Rats." *American Association of Pharmaceutical Scientists Annual Meeting*, Denver, CO, October 21-25, 2001.
163. J.Peng, R.J.Sawchuk, and R.P.Rommel "Mechanism-based inactivation of CYP1A2 by tacrine" *11th North American Meeting of the International Society for the Study of Xenobiotics*, Orlando, FL. October 27-31, 2002.
164. Y.Song, L.L.Cartier, B.W Cheung, R J Sawchuk. "An Animal Model for Multi-site CSF Disposition Studies of Intrathecally Administered Agents". *American Association of Pharmaceutical Scientists Annual Meeting*, Toronto, Ontario, Canada. November 10-14, 2002.

165. J.Z.Peng, R.Rommel, R.J.Sawchuk. "Modeling And Simulation Of In Vivo PK Profiles Based On Mechanism-based Inhibition From In Vitro Studies: Inactivation Of CYP1A2 by Tacrine" *American Association of Pharmaceutical Scientists Annual Meeting*, Toronto, Ontario, Canada. November 10-14, 2002.
166. Y.Song, L.L.Cartier, B. Cheung, R.J. Sawchuk. "Multi-site CSF Disposition Studies of Intrathecally Administered Antiviral Nucleosides in a Novel Animal Model". *8th International Meeting of the International Society for the Study of Xenobiotics*, Dijon France. April 27-31, 2003
167. W. Liu, B. W. Y. Cheung, R. J. Sawchuk. "Distribution Kinetics of Cethromycin in the Chinchilla Middle Ear". *8th International Symposium on Recent Advances in Otitis Media*. Fort Lauderdale, FL. June 3 - 7, 2003
168. P Ji, L Cartier, B W Y Cheung, R J Sawchuk. "Distribution Kinetics Of Cefdinir Between Plasma And Middle Ear Fluid In The Freely Moving Chinchillas". *American Association of Pharmaceutical Scientists Annual Meeting*, Salt Lake City, UT. October 26-30, 2003.
169. W. Liu, B. W. Y. Cheung, R J Sawchuk. "Efflux Transport Of Cethromycin Following Direct Intra-bulla Dosing In The Chinchilla Middle Ear". *American Association of Pharmaceutical Scientists Annual Meeting*, Salt Lake City, UT. October 26-30, 2003.
170. Y. Song and R. J. Sawchuk. "Pharmacokinetics of Zidovudine and Stavudine in the Cerebrospinal Fluid after Intrathecal Administration in a Novel Rabbit Model". *American Association of Pharmaceutical Scientists Annual Meeting*, Baltimore, MD. November 8, 2004.
171. N. Mostafa and R. J. Sawchuk. "Determination of Ofloxacin Clearance from the Middle Ear Fluid using Microdialysis". *American Association of Pharmaceutical Scientists Annual Meeting*, Nashville, TN. November 7, 2005.
172. Z. Li, B. W. Y. Cheung, L. Cartier, and R. J. Sawchuk. "The Possible Role of P-glycoprotein in the Distribution of Clarithromycin to the Middle Ear". *American Association of Pharmaceutical Scientists Annual Meeting*, Nashville, TN. November 7, 2005.
173. R. J. Sawchuk, L. M. Page, and R. L. Rauck. "Pharmacokinetics of Gabapentin Injection in Cerebrospinal Fluid and Plasma with Intrathecal Administration". *FDA Science Forum*, Washington, DC. April 18, 2006.
174. R. J. Sawchuk . "Bugs and Drugs: Does the Anti-infective Agent get to the Target Site?" *American Pharmacists Association Annual Meeting*, Atlanta, GA. March 18, 2007.
175. R. J. Sawchuk . "Future Perspectives on the Contributions of Microdialysis in Drug Research and Development" *Fifth International Symposium on Microdialysis in Drug Research and Development*. Leiden, NE. April 25, 2007.
176. R.J. Sawchuk . "Drug Delivery to the Middle Ear across the Tympanic Membrane for Therapy of Acute Otitis Media". *Global Gators 6th Symposium on Clinical Pharmacy and Clinical Pharmacology*. Munich, Germany. June 9, 2007.

177. T. Wang, R. J. Sawchuk and W. F. Elmquist. "Modeling Distributional Kinetics: Comparison of Two Methods Based on a Partial-Areas Analysis". *American Association of Pharmaceutical Scientists Annual Meeting*, San Diego, CA, November 13, 2007.
178. L. Laksiri, C. Dahyot-Fizelier, S. Lefeuvre, S. Marchand, O. Mimoz, R. J. Sawchuk, and W. Couet. "Microdialysis Study of Imipenem Distribution in the Peritoneal Fluid of Patients with Peritonitis". *Interscience Conference on Antimicrobial Agents and Chemotherapy*, Washington, DC. October 26, 2008.

Exhibit E

CV of Dr. Thakker

CURRICULUM VITAE

Dhiren R. Thakker

RESIDENCE: 317 Dalton Drive
Raleigh, NC 27615
(919) 870 5126 (Res)
(919) 962 0092 (Office)
(919) 966 3525 (FAX)
Dhiren_thakker@unc.edu

PERSONAL: Married, two children, Date of birth: January 25, 1949, Citizen of USA

EDUCATION: Ph.D. (Biochemistry) University of Kansas, Lawrence, KS, 1975
M.S. (Pharmaceutical Chem.) Columbia University, NY, 1972
B.S. (Pharmacy) Bombay University, Bombay, India, 1970

PROFESSIONAL EXPERIENCE

2/96 - current

Ferguson Distinguished Professor of Pharmaceutical Sciences
Division of Molecular Pharmaceutics (formerly Division of Drug Delivery and Disposition), School of Pharmacy (now UNC Eshelman School of Pharmacy)
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599

8//08 – current

Associate Dean, Economic Development and International Partnerships
UNC Eshelman School of Pharmacy

7/98 - 4/08

Associate Dean, Research and Graduate Education
School of Pharmacy (now UNC Eshelman School of Pharmacy)

2/96 -7/05

Joint appointment: Pharmacology
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599

12/95 - 2/96

Visiting Professor
Pharmaceutics Division, School of Pharmacy
University of North Carolina at Chapel Hill,
Chapel Hill, NC 27599

3/92 - 11/95

Director, Drug Metabolism Department, Glaxo Research Institute,
Research Triangle Park, NC 27709

7/90 - 2/92

Department Head, Drug Metabolism Department, Glaxo Research Institute,
Research Triangle Park, NC 27709

12/87 - 7/90

Section Head, Bioorganic Mechanisms Section, Drug Metabolism Department, Glaxo Inc., Research Triangle Park, NC 27709

6/93 - 2/96

Adjunct Professor, Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514

11/90 - 2/96

Adjunct Professor, Department of Medicinal Chemistry, School of Pharmacy, University of North Carolina, Chapel Hill, NC 27514

1/84 - 12/87

Senior Investigator, Laboratory of Molecular Pharmacology, Division of Biochemistry and Biophysics, Center for Drugs and Biologics, Food and Drug Administration, Bethesda, MD 20892.

9/78 - 1/84

Senior Staff Fellow/Research Chemist, Laboratory of Bioorganic Chemistry, National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases, National Institutes of Health.

9/76 - 8/78

Staff Fellow, Laboratory of Chemistry, National Institute of Arthritis, Metabolism, and Digestive Diseases, National Institutes of Health.

9/75 - 8/76

Visiting Fellow, Laboratory of Chemistry, National Institute of Arthritis, Metabolism and Digestive Diseases, National Institutes of Health.

**MANAGEMENT
EXPERIENCE**

1. Led and Managed the Preclinical Drug Metabolism Department at Glaxo Research Institute

- The department consisted of a staff of 36 including 19 Senior Scientists with Ph.D. or equivalent experience.
- The annual operating budget was \$6 million, and the capital budget was approximately \$1.5 million.
- The primary responsibility of the department was to conduct non-clinical metabolism, pharmacokinetic and toxicokinetic studies in support of development candidates, and to participate in the discovery and selection of new drug candidates to achieve optimum metabolic and pharmacokinetic profiles.
- The department also had the responsibility to synthesize radioisotope-labeled compounds for the Research and Development Divisions.

2. As a member of the Technical Development Team (management team), participated in the coordination of exploratory development programs.

- The Technical Development Team had representation from Toxicology, Drug Metabolism, Pharmaceuticals, Analytical Chemistry, Process Chemistry, Clinical Pharmacology, Regulatory Affairs, and Project Planning.
- The Technical Development Team participated in the formulation of strategies for exploratory development (preclinical through phase I/phase II) of drug candidates and was responsible for the implementation of these strategies.

3. Interacted with the FDA on the non-clinical ADME issues.

4. As a member of the Research Management Committees, participated in the management of Discovery Programs in Cancer, Metabolic Diseases, and Inflammation.

**PROFESSIONAL
ACTIVITIES:**

Co-Editor, Medicinal Research Reviews, 2001-2006

Editorial Board, J. Pharm. Sci., Since 1997.

Advisory Board, Office of Technology Development, UNC-Chapel Hill

Advisory Board, Office of Business and Economic Development, UNC-Chapel Hill

Advisory Board, Carolina Student Biotechnology Network, UNC, Chapel Hill

Editorial Board, Current Drug Metabolism, 1999-2002.

Editorial Board, Drug Metabolism and Disposition, 1994-1997.

Board of Directors and Scientific Advisory Board, Qualyst Inc. since 2001.

Drug Development Advisory Board, Scios Inc. (subsidiary of J & J), 2001-2005.

Science and Technology Advisory Board, Oread Inc., 1997-2000.

Scientific Advisory Board, Navicyte, 1999-2001.

Awards Committee, Society for Biomolecular Screening (SBS), 2003-2006.

AAPS Taskforce on Drug Discovery Interface, 2005

Founding Member of the Steering Committee, RTP Drug Metabolism Discussion Group, 1999-2002.

Member of the External Review Committee
Graduate Program, School of Pharmacy, University of Washington, Seattle, 2001.

Basic Pharmacology Advisory Committee
Pharmaceutical Manufacturers' Association Foundation, 1994-1996.

Special Emphasis Panel, National Institute of General Medical Sciences, NIH, 1996.

Organizer - Short Course on "Designing Safe Drugs - Integration of Disposition Studies in Drug Discovery and Development", Residential School on Medicinal Chemistry, Drew University

Organizer and Chair- Short Course on "Prodrug Design – Enhanced and Targeted Delivery of Therapeutic Agents" at the 7th North American ISSX Meeting, October 1996, Sand Diego, CA.

Chair - Special Symposium on "*Drug Delivery and Prodrug Technologies*" at the 31st ACS Western Regional Meeting held in October 1995.

Chair - Session on "*Integration of Preclinical ADME Studies in the Preclinical and Clinical Safety Assessment*" at the annual meeting of the Drug Information Association, 1994.

Chair - Session on "*Delivery and Disposition of Peptides and Oligonucleotides- Current Status and Future Challenges*" at the annual meeting of the International Society for the Study of Xenobiotics held in October 1994.

Special reviewer for Geriatric Review Committee, Institute on Aging, 1985.

Reviewer for Investigational New Drug (IND) applications primarily dealing with Interferons and Monoclonal antibodies, 1984-1987.

Reviewer for several leading journals including Nature, Cancer Research, Journal of American Chemical Society, Molecular Pharmacology, Carcinogenesis, Chemico-Biological Interactions, Analytical Biochemistry, Toxicology and Applied Pharmacology, and Chemical Research in Toxicology, Drug Metabolism and Disposition, Pharmaceutical Research, Journal of Pharmaceutical Sciences, Journal of Experimental Therapeutics.

Served as a consultant to Amgen, Amylin Pharmaceuticals, BASF Bioscience, Du Pont Pharmaceuticals, Glaxo Wellcome, ICAGEN, Intercardia, Parke Davis, Proctor & Gamble, Synaptics, Triangle Pharmaceuticals, Trimeris, Wyeth, Pozen, Ontogen, Chiron, Scios, *Medivation, Arete, Virobay, Sanofi-Aventis, USVP venture partners (Italicized – consulted during 2007)*.

Served as an Expert Witness for Wyeth in Wyeth v. Impax Laboratories, Inc. (deposed – Nov 2007).

**HONORS AND
AWARDS:**

FELLOW, American Association of Pharmaceutical Scientists.

SATO MEMORIAL INTERNATIONAL AWARD presented by the Pharmaceutical Society of Japan in 1987.

PHILLIP NEWMARK AWARD for "Excellence in Biochemical Research" at the University of Kansas in 1974.

DISSERTATION FELLOWSHIP at the University of Kansas in 1975.

GRADUATE HONORS FELLOW at the University of Kansas.

Placed SECOND in Bombay University at the B. Pharm. degree examination.

- RESEARCH:**
- (1) Mechanisms of drug transport across biological barriers
 - (2) Regulation and modulation of tight junctions in biological barriers
 - (3) Targeted drug delivery to solid tumors via prodrugs
 - (4) Gene therapy: in vivo disposition of genes
 - (5) Stereoselectivity of cytochrome P450 isoenzymes
 - (6) Metabolic activation of xenobiotics to mutagens and carcinogens

Ph.D.

- (1) Development of specific irreversible inhibitors of the enzyme, COMT, which plays an important role in the metabolism of epinephrine, norepinephrine, dopamine, as well as several catecholic endogenous compounds and xenobiotics.
- (2) Study of relationship between physico-chemical properties of 8-hydroxyquinolines and their COMT inhibitory activity (Hansch approach).
- (3) Affinity chromatography of COMT.
- (4) Chemical modification of functional groups on COMT active-site.

M.S.

Synthesis of imidazole derivatives as potential chymotryptic agents.

FUNDING: Current:

1. Interplay between CYP3A Metabolism and P-glycoprotein Efflux During Intestinal Absorption of Dual Substrates
Dhiren Thakker, PI
2006-2008
\$199,968 (total cost)

2. A High Throughput Assay for Cytochrome P450-Mediated Metabolism
Dhiren Thakker, PI
North Carolina Biotechnology Center (CFG grant - \$100,000), Qualyst (\$20,000)
2003-2005
\$120,000 (total costs)
3. Novel Absorption Enhancers
Dhiren Thakker, PI
North Carolina Biotechnology Center (SBRA - \$150,000).Qualyst (\$100,000)
2005-2006
\$250,000 (total costs)
4. NC-Pediatric Pharmacology Research Unit
Ross McKinney (Duke), PI; Ralph Raasch, co-PI; Dhiren Thakker; Director, In Vitro
Metabolism and Transporter Core
NICHD, NIH
2004-2008
\$657,000 (total costs)
5. Elucidation of Mechanisms underlying Modulation of CYP3A Metabolism by P-gp
Efflux during Intestinal Absorption of Dual Substrates
Dhiren Thakker, PI
PhRMA Foundation – Predoctoral Fellowship to Beverly Mowry
2005-2007
\$40,000

Past:

5. Identification of the Transporter(s) for Hydrophilic Cationic Drugs for Photoaffinity
Labeling
Dhiren Thakker, PI
University Research Council
\$4,000, 2002-2003
6. Paracellular Transport of Drugs across Intestinal Epithelium
Dhiren Thakker, PI
Ariad Pharmaceuticals
\$30,000 total cost, 2002-2003
7. Intestinal Transport of Drugs
Dhiren Thakker, PI
Arena Pharmaceuticals
\$30,000 total cost, 2002-2003
8. Development of a High Throughput Assay to Assess Susceptibility of Drug
Candidates to Cytochrome P450 (CYP)-mediated Metabolism
Dhiren Thakker, PI
Bristol Myeres Squibb
\$322,540 total costs, 2001-2003

9. Intestinal Transport of Cationic Hydrophilic Compounds
Dhiren Thakker, PI
NIH
\$1,255,083 total costs, 2002 – 2006, not funded
10. Regulation of Intestinal Epithelial Tight Junctions by Phospholipase C
Dhiren Thakker, PI
Senior Research Award
Crohn's & Colitis Foundation of America
\$230,000 total costs, 2002-2003, not funded
11. Paracellular Transport across Intestinal Epithelium - Structural Requirements for Paracellular Transport of Drug Molecules
Dhiren Thakker, PI
Bristol Myeres Squibb
\$70,000 total cost, 2001-2002
12. Dual Radioisotope Labeling of Plasmid DNA
Dhiren Thakker, PI
North Carolina Biotechnology Center
\$55,000, not funded
13. P-Glycoprotein Modulates Opioid Peptide Pharmacodynamics
Gary Pollack, PI, Dhiren Thakker (5% effort)
NIH
\$687,079 total costs, 1999 – 2001, not funded
14. Pharmacological Modulation of the Permeability of the Intestinal Epithelium and Elucidation of Role Played by Biochemical Barriers
Dhiren Thakker, PI
Parke-Davis
\$31,000/year for 2 years, 1999-2001 (year one funded)
15. Role of P-gp in the Transport of Drugs Across Intestinal Epithelium
Dhiren Thakker, PI
Du Pont Pharmaceuticals Co.
\$25,000/year for 2 years, 1999-2001
16. Modulation of Tight Junctions in the Intestinal Epithelium
Dhiren Thakker, PI
Glaxo Wellcome, Inc.
\$35,000, 1999
17. Optimization of Metabolism and PK Properties
Dhiren Thakker, PI
Glaxo Wellcome, Inc. - Glaxo Wellcome - UNC Drug Discovery Program
\$125,000, 1998
18. Barriers to Oral Drug Delivery

Glaxo Wellcome, Inc.
RTP, NC
\$250,000, 1996-1998

19. Combinatorial Approach for Optimizing ADME Properties of Drug Candidates
Diversity Sciences Center, Duke University
Durham, NC
\$60,000, 1997/98
20. Combinatorial Approach for Development of Structure-Metabolism Relationships
North Carolina Biotechnology Center
RTP, NC
\$40,000, 1997-1998

**STUDENTS AND
FELLOWS:**

Graduate Students:

1. Kiho Lee (MCNP) - Ph.D., May 2000
2. Hui Ouyang (MCNP) – Ph.D., Dec 2001
3. Peter Ward (Pharmacology) – Ph.D., May 2001
4. Matt Troutman (DDD) – Ph.D., July 2001
5. Gururaj Rao (DDD) – Ph.D., May 2003
6. Chee Ng (DDD) - (Chair, Dissertation Committee and co-advisor), Ph.D., May 2003
7. Seongwong Hong (MCNP) –Ph.D., May 2004
8. David Bourdet (DDD)- Ph.D., August, 2005
9. Stephanie Faucette (Molecular Pharmaceutics) – Ph.D., May 2006
10. Richard Graham (Molecular Pharmaceutics) – Ph.D., May 2006
11. Tim Tippin (Molecular Pharmaceutics), Ph.D., Dec 2006
12. Beverly Mowrey (Molecular Pharmaceutics), Ph.D. Aug 2007
13. Ryan Klein (Molecular Pharmaceutics), Ph.D. Dec 2007
14. Xin Ming (Molecular Pharmaceutics), Ph.D. expected Aug 2008
15. Will Proctor (Molecular Pharmaceutics) 2nd year
16. Matthew Dufek (Molecular Pharmaceutics) 2nd year
17. Chester Costales (Molecular Pharmaceutics) 1st year
18. Souzan Yanni (U. Leuven, Belgium) 2nd year

Postdoctoral Fellows:

1. Dr. Yan Gao (2006- 2008)
2. Darkhan Utepbergenov (2005-2007)
3. Dr. Lorraine King (2001-1002)
4. Dr. Johne Ansede (2001-2003)
5. Dr. Dongzhou Liu (1996-1998)
6. Dr. Shailesh Desai (1996-1999)
7. Dr. Cuiping Chen (1997-1998)
8. Dr. Sonia Serron (1997-1998)
9. Dr. Pieter Annaert (1998-1999)
10. Dr. Ashwin Patel (1998-2000)

Research Assistant Professor:

1. Dr. Steven Qian (2004-2005)

Visiting Scientist:

1. Souzan Yanni
2. Dr. Harish Padh, Director, PERD Center, Ahmadabad, India (June – September 2006)

DISSERTATION

COMMITTEES:

1. Cuiping Chen, DDD (Ph.D. 1997)
2. Catherine Booth, DDD (Ph.D. 1997)
3. Xinrong Liu, DDD (Ph.D. 1998)
4. Mark Bush, DDD (Ph.D. 1999)
5. Kay Rittenhaus, DDD (Ph.D. 1999)
6. James Whisnant, DDD (M.S. 1999)
7. Mark Summerville, DDD (Ph.D. 2000)
8. Jennifer(Quin) Dong, DDD (Ph.D. 2000)
9. Claude Degenais, DDD (Ph.D. 2001)
10. Preethi Krishnan, MCNP (Ph.D. 2001)
11. Christopher Lowden, MCNP (Ph.D. 2001)
12. Jessica Smith, DDD (Ph.D., 2001)
13. Jian Zong, DDD (Ph.D., 2002)
14. Ryan Turncliff, DDD (Ph.D. 2004)
15. Chris Matheny, DDD (Ph.D. 2003)
16. Lian Zhou, MCNP (Ph.D., 2002)
17. Carolyne Cyne (Pharmacology - Ph.D. committee)
18. Peter Sazani, Pharmacology (Ph.D., 2002)
19. Craig Lee, Exp. Therapeutics (Chair) (Ph.D., 2006)
20. Scott Barrow, Toxicology Curriculum (Ph.D., 2004)
21. Enzo Palma Molecular Pharmaceutics (Ph.D. 2006)
22. Dongmei Liu, Molecular Pharmaceutics (Chair) (Ph.D. expected in 2007)
23. Jian Jiang, Curriculum in Applied and Material Sciences (Ph.D. expected in 2007)
24. Xihong Xu, Chemistry, Duke University (Ph.D. 2008)

PUBLICATIONS:

Co-author of 145 publications which include papers in the peer reviewed journals, review articles and book chapters (List Attached), co-editors of 2 books, and co-inventor on 6 patents (issued and pending).

AFFILIATIONS:

- (1) American Chemical Society (ACS)
- (2) American Association for Advancement of Science (AAAS)
- (3) American Society of Pharmacology and Experimental Therapeutics (ASPET)
- (4) American Association for Cancer Research (AACR)
- (5) American Association of Pharmaceutical Scientists (AAPS)
- (6) International Society for the Study of Xenobiotics (ISSX)
- (7) Indian Association for Cancer Research

PUBLICATIONS

1. Borchardt, R.T. and Thakker, D.: Affinity Labeling of Catechol-O-Methyltransferase with N-Iodoacetyl-3,5-dimethoxy-4-hydroxyphenylethylamine. Biochem. Biophys. Res. Commun., 54: 1233-1239, 1973.
2. Borchardt, R.T. and Thakker, D.R.: Catechol-O-methyltransferase. 6. Affinity Labeling with N-Iodoacetyl-3,5-dimethoxy-4-hydroxyphenylalkylamines. J. Med. Chem., 18: 152-158, 1975.
3. Borchardt, R.T. and Thakker, D.R.: Affinity Labeling of Catechol-O-methyltransferase by N-Halonacetyl Derivatives of 3,5-Dimethoxy-4-hydroxyphenylethylamine and 3,4-Dimethoxy-5-hydroxyphenylethylamine. Kinetics of Inactivation. Biochemistry, 14: 4543-4551, 1975.
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PATENTS

1. Method of Screening Candidate Compounds for Susceptibility to Oxidative Metabolism, US 6,312,917.
2. PLC-based Absorption Enhancers, patent pending
3. Amide Phospholipid-like Compounds as Drug Absorption Enhancers, patent pending.
4. Pharmacokinetic Tool and Method for Predicting Metabolism of a compound in a Mammal, WO 02/10746
5. High Throughput Reactive Oxygen Species-Based Cytochrome P450 Inhibition Assay. US patent filed.
6. Methods and Kits for Determining Metabolic Stability of Compounds. US Patent filed.
7. Direct Activation of Human Phospholipase C β 3 (HPLC β 3) by U73122 in Dodecylmaltocide (DDM) Mixed Micelles via Alkylation at Cysteine Residues, US Patent filed.

ABSTRACTS

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INVITED LECTURES

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- 6.** Environmental Health Chemistry Symposium, American Chemical Society, Washington, DC., 1979.
- 7.** 39th International Congress of Pharmaceutical Sciences, Brighton, U.K., 1979.
- 8.** Department of Chemical Technology, Bombay University, Bombay, India, 1980.
- 9.** Cancer Research Institute, Bombay, India, 1980.
- 10.** Bristol Myers Laboratories, Syracuse, NY., 1980.
- 11.** Laboratory of Developmental Pharmacology, National Institute of Child Health and Human Development, NIH, Bethesda, MD., 1981.
- 12.** Laboratory of Biochemistry and Metabolism, NIADDK, NIH, Bethesda, MD., 1981.
- 13.** International Symposium on Biological Reactive Intermediates, Gilford, Surrey, U.K., 1981.
- 14.** Interx-Merck Pharmaceutical Co., Lawrence, KS., 1982.
- 15.** Smith Kline Beckman, Philadelphia, PA., 1982.
- 16.** Indian Pharmaceutical Association, Bombay, India, 1983.
- 17.** Cancer Research Institute, Bombay, India, 1983.
- 18.** National Center for Drugs and Biologics, FDA, Bethesda, MD., 1983.
- 19.** Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS., 1984.
- 20.** Smith Kline Beckman, Philadelphia, PA., 1985.
- 21.** Cancer Research Institute, Bombay, India, 1986.
- 22.** Central Drug Research Institute, Lucknow, India, 1986.
- 23.** Bhabha Atomic Research Center, Bombay, India, 1986.
- 24.** Hoechst Pharmaceuticals, Bombay, India, 1986.
- 25.** 6th International Catecholamine Symposium, Jerusalem, Israel, 1987.

26. SATO Memorial International Award Lecture at the 107th Annual Meeting of the Pharmaceutical Society of Japan, Kyoto, Japan, 1987.
27. Nagoya City University, Faculty of Pharmaceutical Sciences, Nagoya, Japan, 1987.
28. Tohoku University, Research Institute for Tuberculosis and Cancer Sendai, Japan, 1987.
29. Keio University School of Medicine Tokyo, Japan, 1987.
30. Tokyo College of Pharmacy, Tokyo, Japan, 1987.
31. National Institute of Hygienic Sciences, Tokyo, Japan, 1987.
32. Department of Chemical Technology, Bombay University, Bombay, India, 1987.
33. Laboratory of Bioorganic Chemistry, NIDDK, Bethesda, MD., 1987.
34. Carcinogen Risk Assessment, Banbury Center, Cold Spring Harbor, 1987.
35. Pharmaceutical Institute, School of Medicine, Keio University, Tokyo, Japan, 1988.
36. Tokyo College of Pharmacy, Tokyo, Japan, 1988.
37. Dept. of Pharmaceutical Sciences, Nagoya City University, Nagoya, Japan, 1988
38. Dept. of Medicinal Chemistry, University of North Carolina, 1989.
39. Dept. of Medicinal Chemistry, University of North Carolina, 1990 (presented 3 lectures in a Course on Drug Metabolism).
40. Dept. of Medicinal Chemistry, University of North Carolina, 1991 (presented 3 lectures in a Course on Drug Metabolism).
41. Dept. of Pharmacology, University of North Carolina, 1991.
42. Annual Meeting of the PMA Drug Metabolism Section, New Orleans, 1991.
43. 25th Annual Higuchi Symposium, Lake of the Ozarks, 1992.
44. Enz Lecture, Dept. of Pharmaceutical Chem., University of Kansas, 1992
45. Dept. of Medicinal Chemistry, University of North Carolina, 1992 (presented 3 lectures in a course on Drug Metabolism).
46. Dept. of Medicinal Chemistry, University of North Carolina, 1993 (presented 3 lectures in a course on Drug Metabolism).
47. Dept. of Chemistry, Catholic University, Washington, D.C., 1993.
48. Lab of Bioorganic Chemistry, NIDDK, NIH, 1993.
49. Chaired a session on the "Integration of Preclinical ADME studies in the Preclinical and Clinical Safety Assessment" at the National Meeting of Drug Information Association, at Washington, D.C., 1994.

50. Chaired a session on "Delivery and Disposition of Peptides and Oligonucleotides- Current Status and Future Challenges" at the annual meeting of the International Society for the Study of Xenobiotics (ISSX), Raleigh, NC, October 1994.
51. Chaired a Special Symposium on "Drug Delivery and Prodrug Technologies" at the 31st ACS Western Regional Meeting, San Diego, CA, October 1995.
52. Conference on "Lead Generation and Optimization", Princeton, NJ, September, 1996.
53. Organized a short course presented a talk on Prodrugs at the 7th North American ISSX Meeting, San Diego, October 1996.
54. Winter Conference on "Medicinal and Bioorganic Chemistry", Steamboat Springs, Colorado, January, 1997.
55. Third International Symposium on Innovations in Pharmaceutical Sciences and Technology", Ahmadabad, India, February 1997.
56. S.N.D.T. College of Pharmacy, Bombay University, Bombay, India, February, 1997.
57. Tata Institute for Cancer Research, Bombay, India, February, 1997.
58. Amylin Pharmaceuticals, San Diego, CA, April, 1997
59. Merck Research, West Point, PA, April, 1997.
60. Proctor & Gamble, Cincinnati, OH, June, 1997.
61. AAPS Southeast Regional Meeting, Research Triangle Park, NC, June, 1997.
62. Drew University, (faculty), Princeton, NJ, July, 1997.
63. DuPont Merck, Newark, DE, July 1997.
64. Formulations and Drug Delivery, ACS Conference, San Diego, CA, October 1997.
65. Glaxo wellcome, Inc. Pharmaceutics Division, RTP, NC, January, 1998.
66. Swiss Chemical Society – Minisymposium on Oral Drug Delivery, Basel Switzerland, May, 1998.
67. University of Leuven, Workshop on Industry – Academic Collaborations, Leuven, Belgium, May 1998.
68. Glaxo Wellcome, Inc., Biomet Division, Ware, U.K., May, 1998.
69. AAPS Western Regional Meeting, San Francisco, CA, May, 1998.
70. AAPS Southeastern Regional Meeting, RTP, NC, June, 1998.
71. 28th Annual Gordon Research Conference on Drug Metabolism, Plymouth, NH, July, 1998.
72. Drew University, (faculty), Princeton, NJ, July, 1998.
73. Pfizer, Inc., Groton, CT, July, 1998.

74. Bristol-Meyer Squibb, Inc., Wallingford, CT, July, 1998.
75. School of Pharmacy, University of Michigan, Ann Arbor, MI, September, 1998.
76. Higuchi Research Seminar, Lake of Ozarks, MO, March, 1999.
77. Glaxo Wellcome, Pharmaceuticals Dept., RTP, NC, March, 1999.
78. BASF, Boston, MA, June, 1999.
79. Parke Davis, Inc., Ann Arbor, MI, July, 1999.
80. Novartis, East Hanover, NJ, September, 1999.
81. Institute for Innovative Research, (faculty), San Diego, CA, December, 1999.
82. Agouron Pharmaceuticals, San Diego, CA, December 1999.
83. Glaxo Wellcome (Pharmaceutics), RTP, NC, March 2000.
84. Laboratory of Biorganic Chemistry, NIDDK, NIH, Bethesda, MD, May 2000
85. Pratt Fellowship Program, NIH, Bethesda, MD, May 2000
86. Wyeth-Ayerst, Pearl River, N.Y., June 2000
87. Drew University (faculty), Princeton, NJ, June 2000
88. Chiron, CA, 2001.
89. Roche, Palo Alto, CA, 2001
90. Guilford Pharmaceuticals, Baltimore, MD, 2001
91. Drew University (faculty), Princeton, NJ, 2001
92. Drew University (faculty), Course Organizer, Princeton, NJ, 2001
93. Transform Pharmaceuticals, Boston, MA, 2001
94. Bristol-Myers Squibb, Princeton, NJ, 2001
95. Albany Biomolecules, Albany, NY, 2001
96. Lilly Pharmaceuticals, Indianapolis, IN, 2001
97. 3-D Pharmaceuticals, Philadelphia, PA, 2001
98. Pfizer, Ann Arbor, MI, 2002
99. Guilford Pharmaceuticals, Baltimore, MD, 2002

- 100.** Pfizer (Agouron), San Diego, CA, 2002
- 101.** Serono Pharmaceuticals, Soreno, Switzerland, 2002
- 102.** Avantis, Frankfurt, Germany, 2002
- 103.** Bristol Myers Squibb, Lawrenceville, NJ, 2002
- 104.** Avantis, Pearl River, NJ, 2002
- 105.** Roche, Nutley, NJ, 2002
- 106.** Pfizer, Groton, CT, 2002
- 107.** GPEN, Detroit, MI, 2002
- 108.** GlaxoSmithKline, Philadelphia, PA, 2002
- 109.** Arena Pharmaceuticals, San Diego, CA, 2002
- 110.** Drew University, Newark, NJ, 2003
- 111.** Novartis, Jolla CA, 2003
- 112.** AstraZeneca, Boston, MA, 2003
- 113.** Fibrogen, San Francisco, CA 2003
- 114.** ADMET-1, San Diego, CA 2004
- 115.** AstraZeneca, San Diego, CA 2004
- 116.** LabFusion, Boston, Ma 2004
- 117.** Millennium, Cambridge, MA 2004
- 118.** Schering-Plough, Kenilworth, NJ 2004
- 119.** Neurocrine, San Diego, CA 2004
- 120.** Abbott, Abbott Park, IL 2004
- 121.** Pfizer, Groton, CT, 2005
- 122.** ICOS, Bothell, WA, 2005
- 123.** SCIOS, Inc. San Francisco, CA, 2005
- 124.** Biogen, Cambridge, MA 2005
- 125.** Genzyme, Framingham, MA 2005

126. Sunesis, San Francisco, CA 2005
127. Drew University, Newark, NJ 2005
128. Amgen, Boston, MA, 2005
“Probing the Intestinal Epithelial Barrier: A Tortuous Journey”
129. Pediatric Pharmacology Research Unit Network Meeting, Washington, D. C., 2005
“Implementing In Vitro Drug Disposition Studies to Improve Pediatric Therapy – Challenges and Opportunities”
130. Cambridge Healthcare Institute – Mastering Medicinal Chemistry/ADME In-depth, San Francisco, CA, 2006
“ADME In-depth: A Medicinal Chemistry Perspective” (Lead Lecture)
131. Scitech Center, Mumbai, India, 2006
“Integration of ADME in Drug Discovery: Past, Present, and Future”
132. Indian Drug Manufacturers’ Association Meeting – Bioavailability and Bioequivalence, Mumbai, India, 2006.
“Integration of ADME in Drug Discovery: Past, Present, and Future”
133. PERD Center, Ahmedabad, India, 2006
“Integration of ADME in Drug Discovery: Past, Present, and Future”

“Probing the Intestinal Epithelial Barrier: A Tortuous Journey”
134. Drew University, Madison, NJ, 2006.
“Use of Preclinical Pharmacokinetics and In Vitro Models to Assess Problems of Poor Oral Bioavailability” (with Kim Brouwer)

“Role of Intestinal and Hepatic Metabolism in Drug Clearance – Chemical Strategies to Optimize Metabolic Clearance”
135. Genentech, San Francisco, CA, 2006.
“Use of Preclinical Pharmacokinetics and In Vitro Models to Assess Problems of Poor Oral Bioavailability” (with Kim Brouwer)

“Role of Intestinal and Hepatic Metabolism in Drug Clearance – Chemical Strategies to Optimize Metabolic Clearance”
136. New Jersey Drug Metabolism Discussion Group, Newark, NJ, 2006.
Intestinal Drug Transport: A Black Box or a Target for Rational Design of Orally Active Drugs?
137. Bristol Myers Squibb, NJ, 2006.
Interplay of Transport and Metabolism in the Intestinal Epithelium
138. Nektar Pharmaceuticals, Mobile, Alabama/San Diego, CA, 2007
“Use of Preclinical Pharmacokinetics and In Vitro Models to Assess Problems of Poor Oral Bioavailability” (with Kim Brouwer)

“Role of Intestinal and Hepatic Metabolism in Drug Clearance – Chemical Strategies to Optimize Metabolic Clearance”
139. Molecular Medicine Tri-Conference – ADMET short course, San Francisco, CA, February, 2007.
Lead Speaker - *In Vitro* ADME Assays: Strategic Application to Drug Discovery
Thakker CV, November 2008

140. New England Drug Metabolism Discussion Group Symposium, Boston, MA, April 2007
“Drug Metabolism-Pharmacokinetics-guided (DM/PK-guided) Lead Optimization: A Historical Perspective of a Paradigm Shift”
141. Bayer Pharmaceuticals, Dusseldorf, Germany, January 2008
“Use of Preclinical Pharmacokinetics and In Vitro Models to Assess Problems of Poor Oral Bioavailability” (with Kim Brouwer)

“Role of Intestinal and Hepatic Metabolism in Drug Clearance – Chemical Strategies to Optimize Metabolic Clearance”
141. Molecular Medicine Tri-Conference – ADMET short course, San Francisco, CA, March, 2008.
Lead Speaker – “*In Vitro* ADME Assays: Strategic Application to Drug Discovery”

Exhibit F

CV of Dr. Thisted

Ronald A. Thisted

June, 2009

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The University of Chicago
5841 South Maryland Avenue (MC 2007)
Chicago, Illinois 60637
(773) 834-1242
email: thisted@health.bsd.uchicago.edu

Department of Statistics
The University of Chicago
5734 University Avenue
Chicago, IL 60637
<http://health.bsd.uchicago.edu/thisted/>

- Education: Ph.D. (Statistics) Stanford University, 1977.
M.S. (Statistics) Stanford University, 1973.
B.A. (Mathematics, Philosophy) Pomona College, 1972. Magna cum laude
- Professional: *All at the University of Chicago:*
2005– Member, Center for Cognitive and Social Neuroscience
2001–2008 Member, Institute for Mind and Biology
2000– Director, Biostatistics Core Facility, University of Chicago Cancer Research Center
1999– Chairman, Department of Health Studies
1999– Co-Director, Clinical Research Training Program
1996– Professor, Department of Health Studies
1993–1998 Co-Director, Robert Wood Johnson Clinical Scholars Program
1993– Professor, Committee on Clinical Pharmacology and Pharmacogenomics
1992– Professor, Departments of Statistics, Anesthesia & Critical Care,
and the College
1989–1992 Associate Professor, Department of Anesthesia and Critical Care
1982–1992 Associate Professor, Department of Statistics and the College
1979–1982 Leonard Jimmie Savage Assistant Professor, Department of Statistics
and the College
1976–1982 Assistant Professor, Department of Statistics and the College
- Honors: Phi Beta Kappa, Pomona College, 1972.
National Science Foundation Graduate Fellow, 1973–1976.
Sigma Xi, The University of Chicago, 1977.
The Llewellyn John and Harriet Manchester Quantrell Award for Excellence in
Undergraduate Teaching, 1981.
Faculty, National Center for Advanced Medical Education, 1990–1992.
- Professional Societies:
American Association for the Advancement of Science (Elected Fellow, 1992)
1994–1997 Electorate Nominating Committee, Section on Statistics
American Statistical Association (Elected Fellow, 1988)
1987–1989 Section on Statistical Graphics, Chair (1988)
1994–1996 Executive Committee, Section on Statistical Education
1994–1996 Section Representative, Section on Statistical Computing
American Public Health Association
Association for Computing Machinery
Biometric Society
Institute of Mathematical Statistics
1987–1990 Nominating Committee
1989–1993, 1999–2002 Management Committee, *Current Index to Statistics*
- Editorial: *Computing Reviews*, Reviewer (1978–1987).
J American Statistical Assoc, Associate Editor (1979–1985, 1987–1988).
SIAM J Scientific and Statistical Computing, Editorial Board (1983–1985).
ACM Trans on Math Software, Associate Editor (1990–1992).
Current Index to Statistics, Database Ed. (1994); Managing Ed. (1995); Editor (1996–1998).

Selected Publications

Books

- [1] *Elements of Statistical Computing: Numerical Computation*. Chapman & Hall: London. 1988.

Original Articles

- [2] “The Prediction of Homicide with the Rorschach” (D Lester, J Kendra, R Thisted, W Perdue). *J. Clinical Psych.*, **31**, (1976), 752.
- [3] “Estimating the Number of Unseen Species: How Many Words Did Shakespeare Know?” (B Efron, RA Thisted). *Biometrika*, **63**, (1976), 435-447.
- [4] *Ridge Regression, Minimax Estimation, and Empirical Bayes Methods*. Ph.D. Thesis, Department of Statistics, Stanford University (1976).
- [5] “Prediction of Homicide and Suicide: A Test in a Healthy Risk-Taking Group” (D Lester, JM Kendra, RA Thisted). *Perceptual and Motor Skills*, **44**, (1977), 222.
- [6] “Teaching Statistical Computing Using Computer Packages” (with Discussion), *The American Statistician*, **33**, (1979), 27-35.
- [7] “User Documentation and Control Language I: Evaluation and Comparison of Statistical Computer Packages.” *Computers & Education*, **3**, (1979), 135-141.
- [8] “Predicting a Multitude of Time Series” (RA Thisted, WE Wecker). *Journal of the American Statistical Association*, **75**, (1980), 81-86.
- [9] “Lactic Acidemia in Reye’s Syndrome” (JH Tonsgard, PR Huttenlocher, RA Thisted). *Pediatrics*, **69**, (1982), 64-69.
- [10] “Maximum Likelihood Estimation of Isotonic Modal Regression” (T Sager, R Thisted). *Annals of Statistics*, **10**, (1982), 690-707.
- [11] “Safety and Efficacy of Chymopapain (Chymodiactin) in Herniated Nucleus Pulposus With Sciatica: Results of a Randomized, Double-blind Study” (MJ Javid, EJ Nordby, LT Ford, WJ Hejna, WW Whisler, C Burton, DK Millett, LL Wiltse, EH Widell Jr, RJ Boyd, StE Newton, RA Thisted). *Journal of the American Medical Association*, **249:18**, (1983), 2489-2494.
- [12] “A Statistical Study of Mate Choice: Sexual Selection in a Plethodontid Salamander (*Desmognathus Ochrophæus*),” (L Houck, SJ Arnold, RA Thisted). *Evolution*, **39**, (1985), 370-386.
- [13] “Chymodiactin in Patients with Herniated Lumbar Intervertebral Disc(s): An Open-Label, Multicenter Study,” (DJ McDermott, K Agre, M Brim, FJ Demma, J Nelson, RR Wilson, RA Thisted). *Spine*, **10**, (1985), 242-249.
- [14] “Decreased Incidence and Mortality of Anaphylaxis to Chymopapain,” (J Moss, MF Roizen, EJ Nordby, RA Thisted, JL Apfelbaum, BD Schreider, DJ McDermott). *Anesthesia and Analgesia*, **64**, (1985), 1197-1201.
- [15] “Computing Environments for Data Analysis,” (with Discussion), *Statistical Science*, **1**, (1986), 259-275.
- [16] “Did Shakespeare Write a Newly-Discovered Poem?” (R Thisted, B Efron). *Biometrika*, **74**, (1987), 445-455.
- [17] “Cervical Injury in Head Trauma,” (GL Neifeld, JG Keene, G Hevesy, J Leikin, A Proust, RA Thisted). *Journal of Emergency Medicine*, **6**, (1988), 203-207.
- [18] “Patient-Applied Podofilox for Treatment of Genital Warts,” (KR Beutner, MA Conant, AE Friedman-Kien, M Illeman, NN Artman, RA Thisted, DH King). *Lancet*, (1989, April 15), 831-834.
- [19] “Using a National Health Care Data Base to Determine Surgical Complications in Community Hospitals: Lumbar Discectomy as an Example” (L Ramirez, R Thisted). *Neurosurgery*, **25**, (1989), 218-225.
- [20] “Complications and Demographic Characteristics of Patients Undergoing Lumbar Discectomy in Community Hospitals,” (L Ramirez, R Thisted). *Neurosurgery*, **25**, (1989), 226-231.

- [21] "Increased Risk for Gestational Diabetes Mellitus Associated with Insulin Receptor and Insulin-like Growth Factor II Restriction Fragment Length Polymorphisms" (C Ober, KS Xiang, RA Thisted, KA Intovina, CJ Wason, S Dooley). *Genetic Epidemiology*, **6**, (1989), 559–569.
- [22] "Alcohol after Midazolam Sedation: Does it Really Matter?," (JL Lichtor, J Zacny, K Korttila, JL Apfelbaum, BS Lane, G Rupani, RA Thisted, C Dohrn), *Anesthesia & Analgesia*, **72**, (1991), 661–666.
- [23] "Spreading Depression Increases Immunohistochemical Staining of Glial Fibrillary Acidic Protein," (RP Kraig, L Dong, R Thisted, CB Jaeger). *Journal of Neuroscience*, **11**(7), (1991), 2187–2198.
- [24] "Intravenous Lidocaine does not Cause Shivering-like Tremor or Alter Thermoregulation," (B Glosten, DI Sessler, LG Östman, EAM Faure, L Karl, RA Thisted). *Regional Anesthesia*, **16**, (1991), 218–222.
- [25] "The Automated Interview *vs.* the Personal Interview: Do Patient Responses to Preoperative Health Questions Differ?" (RE Lutner, MF Roizen, CB Stocking, RA Thisted, S Kim, PC Duke, P Pompeii, CK Cassel). *Anesthesiology*, **75**, (1991), 394–400.
- [26] "Predictors of Body Surface Area" (Y Wang, J Moss, R Thisted). *Journal of Clinical Anesthesia*, **4**, (1992), 4–10.
- [27] "Alcohol After Intravenous Midazolam-Fentanyl Sedation: Effects on Psychomotor Functioning," (JL Lichtor, J Zacny, JL Apfelbaum, BS Lane, G Rupani, RA Thisted, C Dohrn, K Kortilla). *British Journal of Anesthesia*, **67**, (1991) 579–584.
- [28] "Sleep and Psychiatric Disorders: A Meta-Analysis," (RM Benca, WH Obermeyer, RA Thisted, JC Gillin). *Archives of General Psychiatry*, **49**, (1992), 651–668. With editorial.
- [29] "Thromboelastogram Fails to Predict Postoperative Hemorrhage in Cardiac Patients," (JS Wang, CY Lin, WT Hung, MF O'Connor, RA Thisted, BK Lee, RB Karp, MW Yang). *Annals of Thoracic Surgery*, **53**, (1992), 435–439.
- [31] "Central Temperature Changes are not Perceived During Epidural Anesthesia," (B Glosten, DI Sessler, EAM Faure, L Karl, RA Thisted). *Anesthesiology*, **77**, (1992), 10–16.
- [32] "The Risk of Human Immunodeficiency Virus in Surgeons, Anesthetists, and Medical Students," (JM Buerger, R Kim, RA Thisted, MF Roizen). *Anesthesia & Analgesia*, **75**, (1992), 118–124.
- [33] "Reassessment of Preoperative Laboratory Testing Has Changed the Test-Ordering Patterns of Physicians" (A Macario, MF Roizen, RA Thisted, S Kim, FK Orkin, C Phelps). *Surgery, Gynecology & Obstetrics*, **175**, (1992), 539–547.
- [34] "Echocardiographic Analysis of Dysfunctional and Normal Myocardial Segments Before and Immediately After Coronary Artery Bypass Graft Surgery," (P Voci, F Bilotta, S Aronson, G Scibilia, Q Caretta, C Mercanti, B Marino, R Thisted, MF Roizen, A Reale). *Anesthesia & Analgesia*, **75**, (1992), 213–218.
- [35] "The Influence of Intravenous Albuterol Injections on Pulmonary Arterial Pressure, Gas Exchange, and Left Ventricular Peak Intensity," (R Walker, JG Weincek, S Aronson, J Zaroff, D Glock, R Thisted, SB Feinstein). *Journal of the American Society of Echocardiography*, **5**, (1992), 463–470.
- [36] "In Vitro Effects of Aprotinin on Activated Clotting Time Measured with Different Activators," (JS Wang, CY Lin, WT Hung, RA Thisted, RB Karp). *Journal of Thoracic and Cardiovascular Surgery*, **104**, (1992), 1135–1140.
- [37] "Can Patients Use an Automated Questionnaire to Define Their Current Health Status?" (MF Roizen, D Coalson, RS Hayward, J Schmittner, RA Thisted, JL Apfelbaum, CB Stocking, P Pompei, DE Ford, *et al.*). *Medical Care*, **30**, (1992), MS74–84.
- [38] "Disease-Specific Survival Following Routine Prostate Cancer Screening by Digital Rectal Examination," (GS Gerber, IM Thompson, R Thisted, GW Chodak). *Journal of the American Medical Association*, **269**, (1993), 61–64.
- [39] "The Interaction between Alcohol and the Residual Effects of Thiopental," (JL Lichtor, JP Zacny, DW Coalson, DC Flemming, A Uitvlugt, JL Apfelbaum, BS Lane, RA Thisted). *Anesthesiology*, **79**, (1993), 28–35.

- [40] "A proposal to use confidence intervals for visual analog scale data for pain measurement to determine clinical significance," (S Mantha, R Thisted, J Foss, JE Ellis, MF Roizen). *Anesthesia & Analgesia*, **77**, (1993), 1041–1047.
- [41] "The initial clinical experience of 1819 physicians in maintaining anesthesia with propofol: Characteristics associated with prolonged time to awakening," (JL Apfelbaum, TH Grasela, CC Hug, CH McLeskey, ML Nahrwold, MF Roizen, TH Stanley, RA Thisted, CA Walawander, PF White). *Anesthesia & Analgesia*, **77**, (1993), S10–14.
- [42] "The role of pharmacoepidemiology research in postmarketing surveillance and anesthesia practice/critical care medicine," (TH Grasela, WD Watkins, CC Hug, CH McLeskey, ML Nahrwold, MF Roizen, TH Stanley, RA Thisted, CA Walawander, PF White, JL Apfelbaum). *Anesthesia & Analgesia*, **77**, (1993), S44–50.
- [43] "Hemodynamic effects of propofol: Data from over 25,000 patients," (CC Hug, CH McLeskey, ML Nahrwold, MF Roizen, TH Stanley, RA Thisted, CA Walawander, PF White, JL Apfelbaum, TH Grasela). *Anesthesia & Analgesia*, **77**, (1993), S21–29.
- [44] "Adverse events in a multicenter Phase IV study of propofol: Evaluation by anesthesiologists and PACU nurses," (CH McLeskey, CA Walawander, ML Nahrwold, MF Roizen, TH Stanley, RA Thisted, PF White, JL Apfelbaum, TH Grasela, CC Hug). *Anesthesia & Analgesia*, **77**, (1993), S3–9.
- [45] "Phase IV study of propofol: Validation of the data set," (ML Nahrwold, MF Roizen, TH Stanley, RA Thisted, CA Walawander, PF White, JL Apfelbaum, TH Grasela, CC Hug, CH McLeskey). *Anesthesia & Analgesia*, **77**, (1993), S34–43.
- [46] "How do anesthesiologists select patients when introducing a new drug into practice?" (MF Roizen, TH Stanley, RA Thisted, CA Walawander, PF White, JL Apfelbaum, TH Grasela, CC Hug, CH McLeskey, ML Nahrwold). *Anesthesia & Analgesia*, **77**, (1993), S30–33.
- [47] "Effects on recovery when isoflurane is used to supplement propofol-nitrous oxide anesthesia," (PF White, TH Stanley, JL Apfelbaum, TH Grasela, CC Hug, CH McLeskey, ML Nahrwold, MF Roizen, RA Thisted, CA Walawander). *Anesthesia & Analgesia*, **77**, (1993), S15–20.
- [48] "Predictive and Diagnostic Tests of Renal Failure: A Review," (M Kellen, S Aronson, MF Roizen, J Barnard, RA Thisted). *Anesthesia & Analgesia*, **78**, (1994), 134–142.
- [49] "Association of Preoperative Risk Factors with Postoperative Acute Renal Failure," (BK Novis, MF Roizen, S Aronson, RA Thisted). *Anesthesia & Analgesia*, **78**, (1994), 143–149.
- [50] "Results of Conservative Management of Clinically Localized Prostate Cancer," (GW Chodak, RA Thisted, GS Gerber, J-E Johansson, J Adolfsson, G Jones, G Chisholm, B Moskovitz, J Warner). *New England Journal of Medicine*, **330**, (1994), 242–248.
- [51] "Relative Effectiveness of Four Preoperative Tests for Predicting Adverse Cardiac Outcomes After Vascular Surgery: A Meta-Analysis," (S Mantha, MF Roizen, J Barnard, RA Thisted, JE Ellis, J Foss). *Anesthesia & Analgesia*, **79**, (1994), 422–433.
- [52] "Premedication with Oral and Transdermal Clonidine Provides Safe and Efficacious Postoperative Sympatholysis," (JE Ellis, G Drijvers, S Pedlow, SP Laff, MJ Sorrentino, JF Foss, M Shah, JR Busse, S Mantha, J McKinsey, J Osinski, RA Thisted, MF Roizen). *Anesthesia & Analgesia*, **79**, (1994), 1133–40.
- [53] "Mucosal allergy in the absence of systemic allergy in nasal polyposis and rhinitis: a meta-analysis," (JS Shatkin, KG Delsupehe, RA Thisted, JP Corey). *Otolaryngology – Head & Neck Surgery*, **111**(5), (1994), 553–6.
- [54] "Estimation of the association between desipramine and the risk for sudden death in 5 to 14-year-old children," (J Biederman, RA Thisted, L Greenhill, ND Ryan). *Journal of Clinical Psychiatry*, **56**, (1995), 87–93.
- [55] "A comparison of intraarticular morphine to bupivacaine for pain control following local knee arthroscopy in the day surgery setting: A prospective, randomized, double-blinded study," (JW Jaureguito, JF Wilcox, SJ Cohn, RA Thisted, B Reider). *American Journal of Sports Medicine*, **23**, (1995), 350–3.

- [56] "Prospective, randomized, double-blind trial of BQ-123 and bosentan for prevention of vasospasm following subarachnoid hemorrhage in monkeys." (A Hino, BK Weir, RL Macdonald, RA Thisted, et al) *Journal of Neurosurgery*, **83**, (1995), 503–9.
- [57] "Resolved: cardiac arrhythmias make desipramine an unacceptable choice in children." (JS Werry, J Biederman, R Thisted, L Greenhill, et al) *Journal of the American Academy of Child & Adolescent Psychiatry*, **34**, (1995), 1239–45; discussion 1245–8.
- [58] "Short-term outcomes after cryosurgical ablation of the prostate in men with recurrent prostate carcinoma following radiation therapy," (GT Bales, MJ Williams, M Sinner, RA Thisted, GW Chodak), *Urology*, **46**(5), (1995), 676–80.
- [59] "Results of radical prostatectomy in men with clinically localized prostate cancer," (GS Gerber, RA Thisted, PT Scardino, HG Frohmuller, FH Schroeder, DF Paulson, AW Middleton, Jr., DB Rukstalis, JA Smith, Jr., PF Schellhammer, M Ohori, GW Chodak), *JAMA*, **276**(8), (1996), 615–9.
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Selected Grants and Contracts

5K30 HL04093-02 Coe, F. (PI) 6/1/99–9/27/07 (NIH)

Clinical Research Training Program

Roles: Program Co-Director, Seminar Director

UL1 RR024999 Solway, J. (PI) 9/28/07–present (NIH)

Clinical and Translational Science Award

Roles: Population Sciences Cluster Director, Clinical Research Training Program Co-Director

P01 AG18911 Cacioppo, J. (PI) 7/1/01–6/30/06 (NIH)

Social Isolation, Health and the Aging Process; Biostatistical Core B

Role: Director, Biostatistics Core

2 P30 CA14599-28 Le Beau, M. (PI) 4/1/02–present (NIH/NCI)

UCCRC-Cancer Center Support Grant; Subproject: Biostatistics Facility

Role: Scientific Director of Biostatistics, Executive Committee of Cancer Center

U01 DK62429 Cho, J (PI) 9/30/02–present (NIH/NIDDK)

IBD Genetics Consortium Data Coordinating Center

Role: Co-Investigator, Data Management Core

R01 NS40229 Frank (PI) 9/18/99–6/30/03 (NIH)

Hemicraniectomy for Swelling from Cerebral Infarction

Role: Director, Data Coordinating Center

Cassell, C. (PI) 7/1/93–6/30/95
Thisted, R. (PI) 7/1/95–6/30/98
Levinson, W. (PI) 7/1/98–6/30/01
Lantos, J. (PI) 7/1/02–6/30/06 (Robert Wood Johnson Foundation)
Clinical Scholars Program
Role: Co-PI to 1998, Co-Director to 1999; Core-Faculty; Advisory Board

Teaching

Recent Courses

- 2009 Health Studies 327: Biostatistical Methods
 - Seminar in Clinical Research Methods (30 weeks)
 - Medicine 777: Advanced Clinical Pharmacology (Lecture: Pharmacoepidemiology)
 - Family Medicine 304: Epidemiology and Clinical Investigation (Lecture: Screening Tests)
- 2008 Health Studies 327: Biostatistical Methods
 - Seminar in Clinical Research Methods (30 weeks)
 - Statistics 307/Computer Science 378: Numerical Computation
- 2007 Health Studies 327: Biostatistical Methods
 - Seminar in Clinical Research Methods (30 weeks)
 - Medicine 777: Advanced Clinical Pharmacology (Lecture: Pharmacoepidemiology)
 - Statistics 307/Computer Science 378: Numerical Computation
- 2006 Health Studies 327: Biostatistical Methods
 - Seminar in Clinical Research Methods (30 weeks)
 - Medicine 777: Advanced Clinical Pharmacology (Lecture: Pharmacoepidemiology)
- 2005 Statistics 307: Numerical Computation
 - Seminar in Clinical Research Methods (30 weeks)
- 2004 Health Studies 327: Biostatistical Methods
 - Health Studies 541: Epidemiology and Clinical Investigation (Lecture: Chronic Disease Epidemiology)
 - Medicine 777: Advanced Clinical Pharmacology (Lecture: Pharmacoepidemiology)
 - Medicine 603: Critical Appraisal of Medical Literature (Lecture: Statistical issues)
 - Seminar in Clinical Research Methods (30 weeks)
- 2003 Health Studies 541: Epidemiology and Clinical Investigation
 - Health Studies 327: Biostatistical Methods
 - Medicine 777: Advanced Clinical Pharmacology (Lecture on Pharmacoepidemiology)
 - Medicine 603: Critical Appraisal of Medical Literature (Lecture: Statistical issues)
 - Seminar in Clinical Research Methods (30 weeks)
- 2002 Health Studies 541: Epidemiology and Clinical Investigation
 - Medicine 777: Advanced Clinical Pharmacology (Lecture on Pharmacoepidemiology)
 - Medicine 603: Critical Appraisal of Medical Literature (Lecture: Statistical issues)
 - Seminar in Clinical Research Methods (30 weeks)
- 2001 Health Studies 541: Epidemiology and Clinical Investigation
 - Statistics 224: Applied Regression Analysis
 - Medicine 777: Advanced Clinical Pharmacology (Lecture on Pharmacoepidemiology)
 - Medicine 603: Critical Appraisal of Medical Literature (Lecture: Statistical issues)
 - Seminar in Clinical Research Methods (30 weeks)

University Committees

Current appointments:

Executive Committee, Clinical Research Training Program, 1999–.
Executive Committee, Biological Sciences Division, 2000–.
Committee of Basic Science Chairs, Biological Sciences Division, 1999–.
University of Chicago Medical Center, Budget Oversight Committee, 2007–.
Executive Committee, Institute of Translational Medicine (CTSA), 2007–.
Faculty Science Review Committee, 2009–.

Previous appointments (since 1988):

Committee of Clinical Chairs, Biological Sciences Division, 1999–2006.
Executive Committee, University of Chicago Cancer Research Center, 2000–2005.
Advisory Committee, Robert Wood Johnson Clinical Scholars Program, 1999–2006.
Search Committee (Chair), Chairman of Department of Psychiatry, 2003–2004.
Committee to Review Appointments and Promotions, 2003–2004.
Tenure and Tracks Committee, 2003–2004.
Committee to Advise the Provost on Federal Wide Assurance (Chair), 2003.
Research Aims Committee, Division of Biological Sciences, 2002–2003.
Search Committee, Chairman of Department of Obstetrics & Gynecology, 2000–2003.
Faculty Committee to Advise the President on the Dean of the Biological Sciences Division, 2001–2002.
Search Committee, Chairman of Department of Family Medicine, 2000–2002.
Provost's Committee on Medical Informatics, 2000–2001.
Clinical Translational Advisory Group, Biological Sciences Division, 1999–2001.
Co-chair, Committee on Law and Medicine, BSD and Law School, 1999–2000.
Working Group on Clinical Data Sharing, 1999–2001.
Executive Committee, Department of Anesthesia & Critical Care, 1994–1998.
Institutional Review Board, Division of Biological Sciences, 1983–1986, 1987–1997.
Faculty Campus Planning Committee, 1993–1996.
College Curriculum Committee, 1990–1996.
Board of Computing Activities and Services 1981–1986, 1991–1994.
Physical Sciences Division, Space/Facilities Committee, 1992–1994.
Committee on Family Practice (BSD), 1993.
Provost's Committee on Health Studies, 1993.
Health Studies Committee (BSD), 1991–1992.
College Council, 1979–1982, 1983–1986, 1989–1992.
Working Committee on Public Computing, 1987–1988.

Refereeing, 2005–

Annals of Statistics

Regulatory Pharmacology and Toxicology

Journal of Clinical Oncology

Journal of Surgical Research

Neuropsychopharmacology

Perspectives in Biology and Medicine

Statistics in Medicine

NIH, Center for Scientific Review (Surgery, Anesthesiology and Trauma study section)

NIH, Center for Scientific Review (Challenge Grant Editorial Panel HDM-P)
NSF, Division of Mathematical Sciences